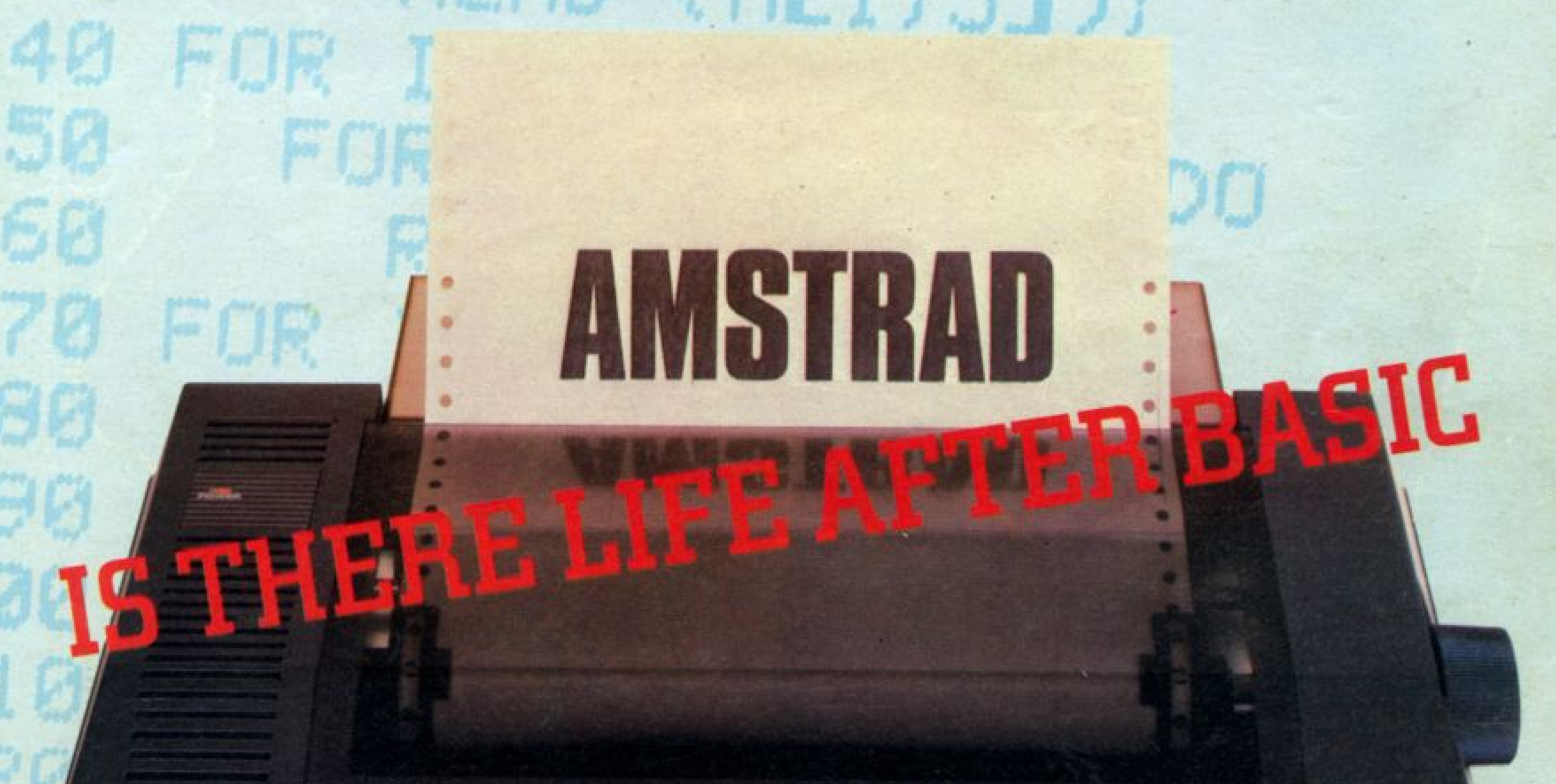
CPC 464 USER

Issue number two: October/November 1984

The Official AMSTRAD Micro Magazine

95p



IS THERE LIFE AFTER BASIC



DISC DRIVES ARE COMING!

£2,000 PROGRAM Competition: Results Plus Another Entry Form

CPC464 USER FIRST: DIRECT TYPESET PROGRAM LISTINGS

Screen Dumps For Your CPC 464

CPC464 User

Issue No. 2 November 1984

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Please sir !

Roland Perry explains the finer points to one of the many classfulls of service personnel that have been trained at Amsoft.

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William Poel
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Consultants
Roland Perry
Alex Martin
David Robinson
Locomotive Software
Treasurer
Dickie Mould
Advertisement sales
James White

In the next Issue:

CPC464 User's first Christmas issue!

The enthusiasm for more information from CPC464 users is overwhelming.

We had not originally intended to produce the next issue until the new year - but by popular demand, we'll do our best to get it out before Christmas.

Reviews

CP/M means business

An overview of the major CP/M packages suported by Amsoft on the CPC464. Software currently available for £250 per module will be available for less than £50 per module on the CPC464: incredible value for money, as usual!

Starwatcher from Triptych Publishing

Superb applications software from the Brainpower series
....plus extra pages of games reviews, utilities and an adventure 'special'

Features

Go for a spin withthe new Amstrad Disc system

Gareth Jefferson supplies the lowdown on disc operating systems, CP/M utilities and applications.
The hardware and system software is discussed in detail by the designers.

Introducing Forth

....gives you the background and reasons why Forth will be a valuable adjunct to your collection of second languages

News

AWA of Australia reports on how the CPC464 is getting on Down Under.
Amstrad's Hong Kong office reports on how the CPC464 is managing to carve a market in the most ferociously competitive consumer electronics capital of the world.

Plus all the news that you send in: free software for submissions!

Editorial

It's a pleasure to be able to preside on an issue that has doubled the size of CPC464 User. We still need plenty more input from users - although the enticement of a £2000 competition has certainly wheeled along quite a few cassettes during the past month, more words would not go amiss.

Surveying the scene

As many of you will know, we operate a registration card scheme with hardware products to get feedback from customers - and I thought you might be interested to learn of some of the most significant results from this ongoing survey.

The first point is that the majority of CPC464 owners are not first time buyers. In fact, one owner seems to be a collector with no less than 7 other types of machine.

The second point probably stems from the first point, and that is that there is a strong desire for second languages and applications software. A general hunger for development tools and general experience comes across from a brief scan of the survey results.

This is probably a result of the fact that we did not actually advertise the computers anywhere until the start of September, so the majority of sales were to the initiated who read computer magazines. This strong hacker influence may shift with the national consumer sales drive towards Christmas, but it's really gratifying to know that so many of our babies are being adopted into such good homes. There are already many signs of good software emerging in specialist areas, and the reports back from experienced writers say that the machine and its potential gets more exciting the more familiar they become.

The sad truth of software marketing is that once the retailer steps back from the obvious arcade specials -the market not only fragments, it positively shatters into a myriad of specialist interests. Several big names had their fingers burned with too much of the wrong stock this summer, so it's a brave store that caters for interests such as Forth utilities and a Small C compiler.

The software directory we start in this issue is designed to provide a marketplace and guide for specialist types of software - and to further this cause, we offer a free small-ads section starting with our next issue.

Disc time

Discs are nearly with us. Shipments start in November, but don't be surprised if you don't see one until December, since the demand is going to be massive. Interest at the PCW show clearly shows that users want discs very badly - and we are delighted to be able to report that all twenty machines on the show stand, together with all three disc drives, worked faultlessly throughout the show.

Many naughty lads were spotted trying to reset machines by switching the monitor on/off switches, and some by using the **[CTRL] [SHIFT] [ESC]** sequence, but you don't catch us out that easily when some of us have been attending PCW shows since they were tressle table affairs in small hotels. We have seen it all before.

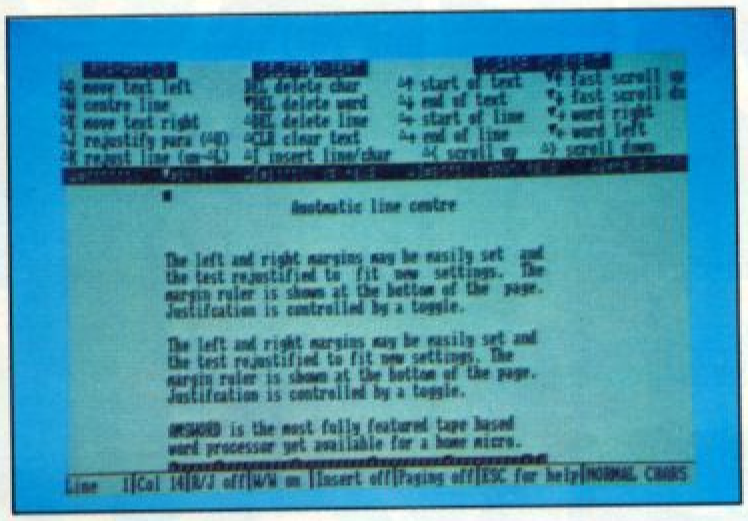
The only failure to report was the demise of a JY-1 joystick that suffered at the frustrated hands of a Code Name Mat player who failed to realise that you push forwards to dive. Better luck next time, whoever you were - and bring your own joystick.

Service!

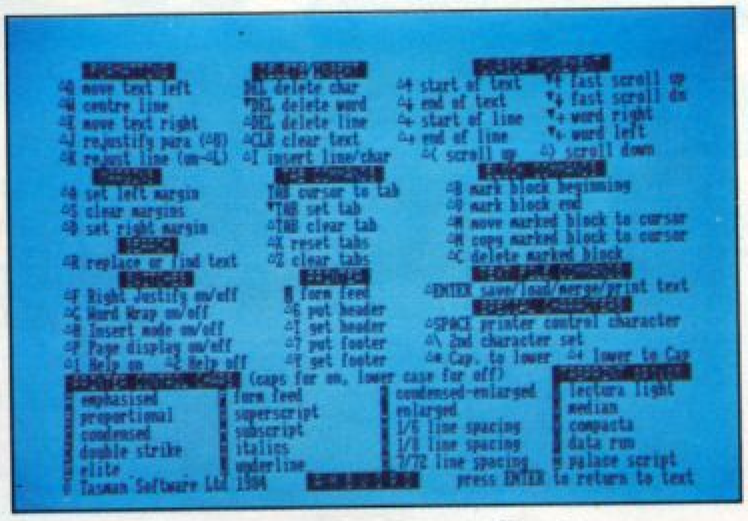
The delay in order processing at Amsoft has been quite unforgivable over the past month or so. Maybe if the accounts department shipped out their ICL mini and installed multiple CPC464's all this would change, but we are promised a 'new look' to the efficiency of order processing by the time this issue arrives with users.

A wordprocessor program that's as good as your CPC464.









We managed to restrain Robin Thomson of Tasman Software from adding new features to AMSWORD just long enough to get a master copy to test and send to the duplicators. We were able to sedate him just after he'd finished adding the facility for full screen program editing.

SOFT164 is due to be released during early November. It's got more bells and whistles than we've got space to describe - so it's a good job there's a substantial manual and tutor file included. At £19.95, we're quite confident that you will be delighted with the program and the very comprehensive instructions.

Amsword (SOFT164) £19.95

From Amsoft and good software stockists.

NEWS





The CPC464 and friends

Don't say AMSTRAD, say CPC464!

Some timely advice to potential authors of both software and features for CPC464 User........

Whatever else you do, don't call the CPC464 'the Amstrad'. The number of references that are appearing describing this noble product in this way grows daily, along with the blood pressure of those who try hard to maintain the correct nomenclature.

If Amstrad were to be contemplating a further computer product - I'm not saying it is, but in case it were - what would that be called? - and how would we all distinguish this from its predecessor?

This is particularly important for writers of books and magazines. CPC464 is a bit of a mouthful, so help us choose a few suitable names for subsequent products. Who knows what sort of prize awaits the submitter of the best suggestion?

What a Great Show!

The Amstrad stand attracted a tremendous following at the Personal Computer World Show at Olympia.

Most of the 46000 visitors that walked through the turnstiles between Wednesday 19th and Sunday 23rd September stepped onto the Amstrad stand. Either that, or the stand builder used a cheaper grade of carpet than we were charged for!

Amstrad, although sharing the Ground Floor of the exhibition with some of the biggest (current) names in the computer world (Tandy, Sinclair, Commodore and Acorn) certainly looked to pull the largest crowds.

In addition to green and colour versions of the CPC464, DMP-1 printers and plenty of new software the 3" Disk Drive was on show for the very first time - it demonstrated its voluminous storage capacity, speed of loading even the most complex of games and CP/M and DR LOGO operating systems.

In their thirst for information the crowds ate their way through more than 100,000 assorted leaflets 20,000 plastic carrier bags and kept technical advisors from Amsoft so busy that one had to be relieved from duty with a nasty case of laryngitis.

What did amaze all company personnel was the intense interest and unfailing patience of the show's visitors - at most times during the day people queued 3 deep waiting for their chance to receive a hands-on trial at the 20 computers that had been built in to the stand. We allowed ourselves a moment or two to gloat as the staff on adjacent stands wrestled with faulty machines to replace them as they periodically went wrong. It's a good job none of ours went wrong, since it was a rather substantial job to prise them away from the stand to replace them.

Amstrad and Amsoft wishes to thank all those patient people and looks forward to meeting many more at forthcoming exhibitions.

ITV Asks the Whizz Kids To Decide

Tension mounted for all the major manufacturers of home computers during Friday of the PCW show. Vincent Graff and Matthew Gerry had been commissioned by Thames Television to select the computer to appear in the weekly televised CBTV series.

Early on in the day Vincent and Matthew went on a reconnaissance trip to question, probe and sample the delights of a wide range of machines. Later on in the day the cameras followed the two 15 year old experts with program's presenter Paul Henley.

Paul, like all newcomers to the world of home computers drew on Matthew and Vincent's knowledge. He was given numerous demonstrations and bombarded with ROMs, RAMs, Pixels and Bauds.

Then came the bottom line - which computer would they recommend?

Well without wishing to enlarge Arnold's (CPC464) head further just watch CBTV on Thames each week between now and next spring - you might recognise his familiar face. Some of you might like to send in programs for CBTV to use on the air: it could start a whole new craze. Watch the program.



LE MICRO ANTI-CRISE

The French have their own unique way of expressing themselves and at present its keeping the switchboard at Amstrad's French office jammed.

From the start of the fairly low-key advertising campaign the customer relations department have been listening to such superlatives as 'C'est fantastique' down the end of the phone for a solid 8 hours every day and when they can't get through on le telephone some 200 write in per day requesting 'votre documentation s'il vous plait'. (Just who is this Marc James? -ed)

It appears that the completeness of the Amstrad computer has touched on one of those very sensitive French nerves, don't forget across the channel they have to worry about multiple standards of television - PAL, SECAM, PERITEL, 819 lines AND 625 lines - so the 'plug it in and off you go' argument is particularly pertinent. [Un plug et il marche]

As Francois Quentin (French computer project leader) correctly predicted some time ago, the CPC464 is selling like ripe Camemberts - they don't like hot cakes over there.

Coincidentally at exactly the same time the British public were visiting their premier computer show, so too were their French counterparts. Of course Amstrad were there and reported tremendous interest from both the trade and the public during the 9 days SICOB Show at La Defense in Paris.

YOU'RE NEVER TOO OLD TO START

What an amazing woman Miss Cecile Chazalon of Hove is. At 74 years of age she is probably our oldest user club member, yet her dexterity and powers of programming have to be seen to be believed.

One of the very first CPC464 owners in the country - she bought her machine back in June from Lion House in Brighton and has been a dedicated Amstrad fan ever since.

'I was firmly convinced that the BBC was for me' she told Chairman Alan Sugar, 'but when I began to read the reports, I was forced to change my mind and I am glad that I did - my Amstrad gives me hours of pleasure, and improves my hand to eye coordination'.

'My favourite game is Electro Freddie and I enjoy the chess game too' Miss Chazalon explained.

The forthcoming Star Watcher program is definitely down on Miss Chazalon's list to buy, for as if computing wasn't enough, she is an ardent amateur atronomer amongst her many other accomplishments.



PS If you wish to complain about the stereotype French parody perpetrated by our indominatable Mr James, complaints should be written on a string of onions and delivered (on a bicycle of course) to CPC464 User.....

AMSTRAD Helps Student Form His Own Company

Amstrad have given a seventeen year old student £1000 for writing a program, the money for which will go towards a company to be formed by Paul Ayton and his student colleague Stephen Saxon.

Seventeen year old Paul Ayton, who has just finished his 'A' levels at Worthing Six Form College, wrote the program and sent it off to the Software Development Manager at Amstrad. Paul was hoping to raise some money so that he and Stephen could start their own software company writing computer programs.

The program which was bought by Amstrad for its Amsoft range is a simulation of a fruit machine. The player starts with £5.00 in change and by playing the machine has to try and win as much as he can. There are variations in the game which allows the player to gamble his winnings for 'Winner Spinners', for example a 50p win can be converted into one winner spinner, or a £2.00 win into 5. The winner spinners then give you a guaranteed return ranging from 20p to £1.50.

The game will be marketed under the name of Jackpot and will be available around mid-November at a retail price of £8.95.

Paul and Stephen have been writing computer programs for 4 years and Paul is hoping to study computer science at University next year.

NEWS continued...

A first for CPC464 User?

One of the big, big headaches for both the publisher and reader of a computer magazine is the scope for misinterpretation of program listings. If the printout from the printer is used, it can never be made to fit the allocated space tidily - and once the layout department takes a pair of scissors to it..... well, be prepared for some unscheduled renumbering.

Most printers fail to draw enough distinction between the lower case letter 'l', and the figure '1'. The confusion between capital 'O' and 'Ø' (zero) is legendary. Many printers offer the facility to slash the zeros, but too many published listings end up confusing rather than informing. And then there's the question of spaces ....

So we're delighted to announce that the listings published in this and all future AMSOFT publications now originate from the running CPC464 program and typeset using the concise and unambiguous OCBR typeface which has fixed character widths so that the spaces are instantly identified, zeros are clearly set apart with a distinctive slash, and there is no excuse for confusing '1' and 'l'.

That's not a guarantee that there won't be some bugs (or unexpected features) in the programs published - but we believe it is a unique facility amongst computer magazines published in this country to help the readers get the most success with the least hassle. How come we can do it and they can't?

This facilitiy has arrived a little later than we had originally hoped, but it means that all future user guides and similar publications should be the cause of less grief and proof reading at 3 am than has hitherto been the case.

RAVE REVIEWS

It isn't often that you find an overwhelming collection of superb reviews in the world of consumer electronics. We take a glimpse at Amstrad's press cutting file and report on what the press are saying about the CPC464.



It all started with that very comprehensive review from Guy Kewney of PCW in April of this year. PCW were bold enough to put the CPC464 on the front page and proclaim it as "The Sinclair Beater".

John Conquest of Big K is not a man who pulls his punches - *"... the friendly Locomotive Basic leaves Commodore's for dead and is very fast".*

Max Phillips of PCN sung its praises in June:

"many of the best features of rivals and almost none of their mistakes"

"... the Amstrad micro is beautifully designed and engineered"

"If you want a home computer to learn BASIC, the Amstrad is ideal"

"... it's a great home computer"

"it is an easy and capable machine that offers tremendous value for money"

"Amstrad BASIC has been designed by people who know what they are doing"

Steady on Max, leave a few compliments for some of the other journalists! Well he did, and they took advantage of what was left to be said:

"outperforms the Commodore 64 in virtually every department" and *"The CP/M system is even more amazing value"* said Practical Computing in June - more from them later.

In September Geoff Bains of What Micro took off from where Max Phillips left off.

"the graphics potential of the Amstrad is basically better than that of the BBC, the previous king of graphics on home micros"

"some of the games that are already available make good use of sound,... and the effect... is quite amazing"

"it is, in all, a much more versatile system than the normal programmable function keys that you find on the BBC micro and the like"

NEWS continued...

In the same month Peter Green of Computing Today made some very relevant comments.

"Amstrad have reversed the industry trend of broken promises and receding delivery dates with a vengeance"
"the whole concept of the machine is a nice change for people fed up with untangling masses of cable"

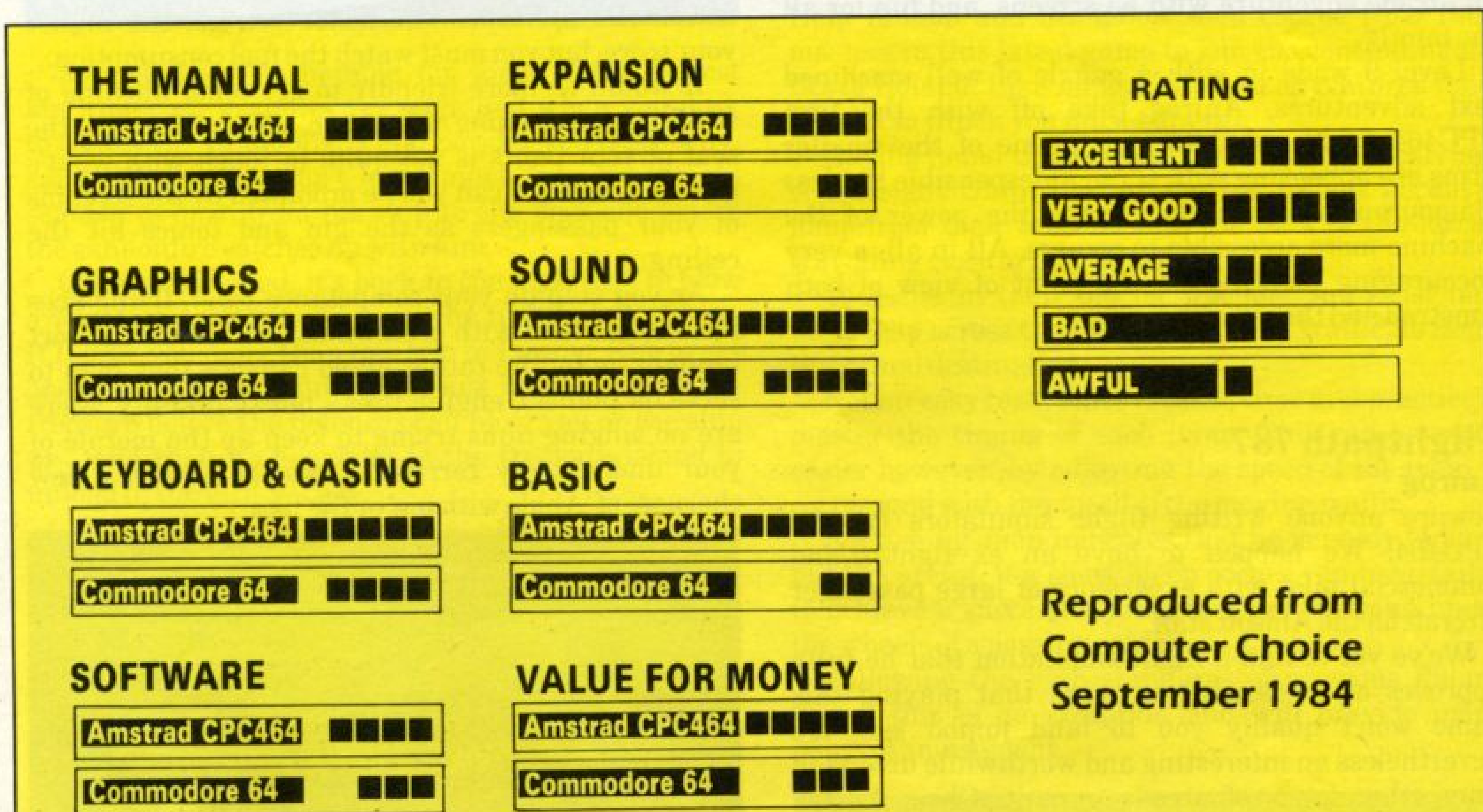
Computer Choice decided to show a head-on confrontation between the Amstrad CPC464 and the Commodore 64. Since the results speak for themselves I've decided to list them below:

As if that wasn't enough they added; *"I thought the Oric keyboard was good until I saw the CPC464"*
"The best BASIC I've seen for some time..."
"Either monitor is streets ahead of a conventional T.V., and the colour monitor is spectacular indeed."

Simon Rockman of Personal Computing Today generally agreed with the Computer Choice assessment; *"... the Amstrad knocks spots off the Electron and CBM64"* and he half expected it to have come from another well known manufacturer;

"The Amstrad CPC464 is really wonderful, giving the value for money one would expect from Sinclair". He also feels that the Japanese are in for a rough ride. *"The Japanese might as well pack up their MSX machine and go home!"*

In the most recent of reviews Practical Computing posed the question *"Is this today's best value in home computing?"* and in the final analysis ended by validating its findings saying *"I am aware this is a rave review, but we don't do them very often in Practical Computing and it is a relief to find something at the home end of the market that deserves it".*



YOUR NEWS PLEASE!

I'm still waiting patiently for your news and can't believe that you're such a silent lot. I'm sure you've got something to say that will interest your fellow readers whether it be a story, comment or point of view. Don't delay, get that pen out or connect your printer and send your news to me -

Marc James, CPC464 User, Amstrad Consumer Electronics PLC,
169 Kings Road, Brentwood, Essex CM14 4EF.

This month I'm giving away a free arcade game to every letter published.

Reviews

We start to include some non-AMSOFT products in the review section this month. A successful machine like the CPC464 is bound to attract a following from software houses - and several have been good enough to send in review material.

If you know of any programs that don't appear in our directory listing (there are still many authors who don't know about the directory service), then we would be pleased to hear about them - with your comments if you fancy trying your hand at reviewing. Be sure to include the details of publisher and price.

Games

There's growing evidence that the more experience writers gain, the more extensive is their use of features and the more dynamic the result of their labours. Top of the bill is 'Roland in Time' from Gem, an arcade adventure with 53 screens, and fun for all the family.

Level 9 wade in with a gaggle of well machined text adventures, Anirog take off with the first CPC464 flight simulator, and some of the smaller firms are appearing with those indespensible but less glamourous utilities that make the power of the machine more accessible to owners. All in all, a very encouraging month from the point of view of both Amstrad and the owners.

Flightpath 737

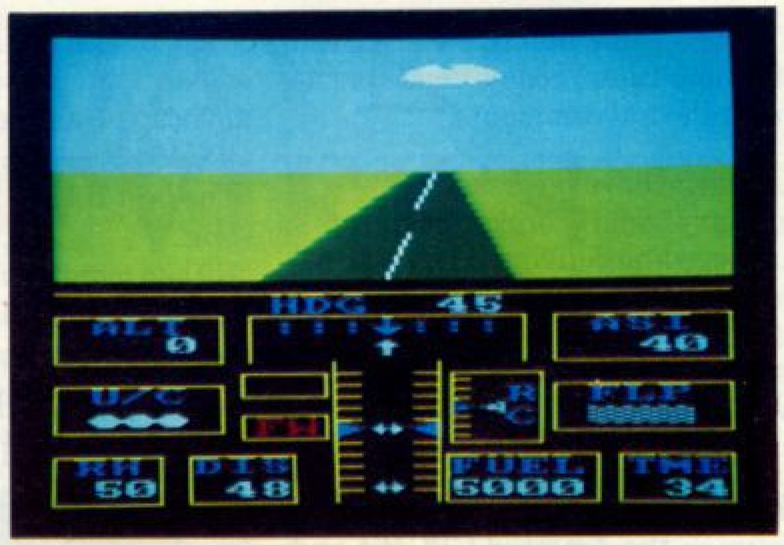
Anirog

Beware anyone writing flight simulators for the CPC464! We happen to have an ex fighter and commercial pilot with experience of large passenger aircraft on the Amsoft staff.

We've yet to find a flight simulation that he fully approves of, so bearing in mind that playing this game won't qualify you to land jumbo jets, it's nevertheless an interesting and worthwhile diversion from other types of arcade pursuit. Chris Anstey stuck his head in the clouds, and came back with the following observations from 20,000 feet.....

The program begins by requiring you to taxi onto the correct runway heading, then accelerating to take off speed. You must remember to extend the flaps as the speed increases - and subsequently retract these with the undercarriage after take off.

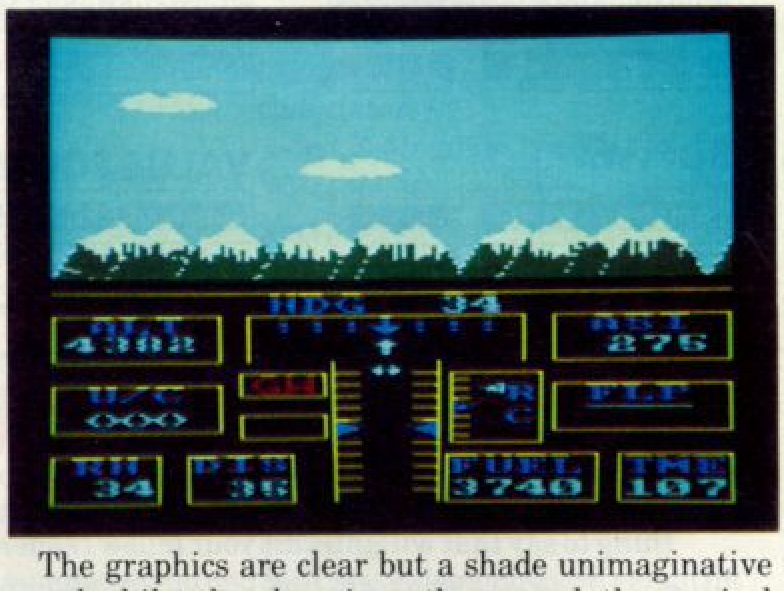
You then climb and accelerate to cross a mountain range: the height of which is determined by the skill level selected at the outset. If you have got this far, you must then approach the landing runway and descend, keeping the speed under control, and staying level.



You have to manipulate the speed, flaps and undercarriage and then reverse thrust on touch down or you won't stop before the end of the runway. If all is well, you will be given a score and a report on aeronautic aptitude. The faster you go, the higher your score, but you must watch the fuel consumption.

It would be more friendly to get some warning of stalling or exceeding maximum speed. After all, the seat of your pants is not quite in touch with what's going on, and nor can you be prompted by the screams of your passengers as the gin and tonics hit the ceiling.

As you step up your competance level, flying aces have to contend with crosswinds (no, its not the sort brought on by the rather bland canapes they tend to serve on planes), engine fires - but thankfully, there are no singing nuns trying to keep up the morale of your undoubtedly terrified passengers with a few choruses of 'Abide with me' or the like.



The graphics are clear but a shade unimaginative - and whilst the plane is on the ground, the musical accompaniment is very reminiscent of the sort of wallpaper music they soothe you with as the plane is taxi-ing for take off. As the CPC464's first flight simulator, you will find it's well worth the reasonable £6.95 being charged by Anirog.

Roland Ahoy!

Computersmiths

A rip-roaring tale of daring-do, set in the Caribbean. The good ship Falcon must be manoeuvered around the various sea hazards (including a genuine sea monster), to dock at Powder Key to get munitions to blow up the boom that protected Treasure Key from marauding pirates such as the ubiquitous Roland and his motley crew.



Roland Ahoy! is notable for some of the fastest machine code graphics yet seen, and when you dock to collect the cannonballs and powder you'll see why, since the defences don't leave much time for the old sea dog to dash from his ship to the dockside before the cannonfire catches up with him.

Once provisioned, it's back to the high seas to blow a way through to the treasure by firing at the boom. It'll take you more than one trip to Powder Key to get enough ammo on board. You must dock and grab the treasure before the defences can blow you or the ship up - and then its heave-ho to the treasure island to unload in the pirates cave.



The nasty to avoid here is a particularly unpleasant spider - but if you are successful, then it's time to break out the brandy and prepare for the next sortie. A nicely presented game with enough originality to see it through. The screen shots illustrate the excellent use of colour graphics to raise the game to a standard that underlines the



limitations of lesser computers. The sound support could have been a little livelier, John Line and his bloodthirsty crew would doubtless have keelhauled our senses with a rip roaring sea shanty or two.

One final thought, shouldn't 'pieces of eight' be called 'bytes'??

Roland on the Run

Help Roland and his fellow men escape from their masters in this latest game to join the continuing antics of Roland. Like all good Roland adventures there is a plot to which you must adhere...

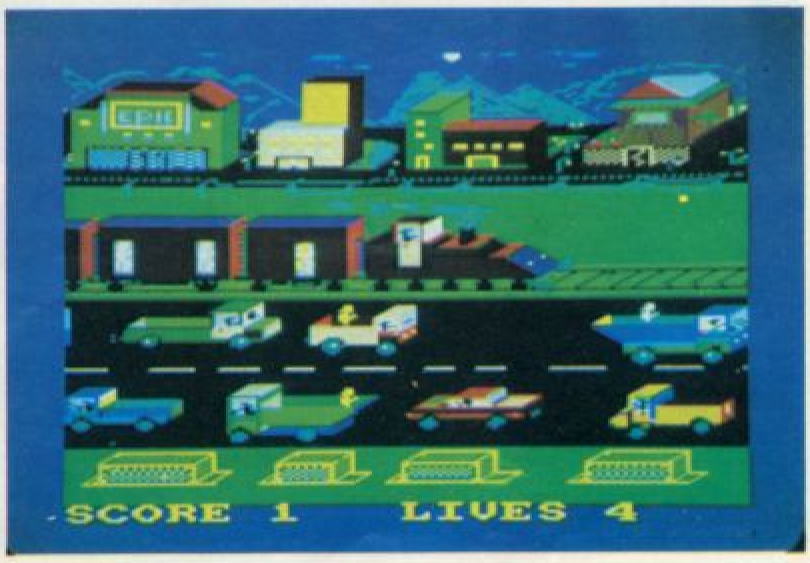
Having found themselves cooped up in the carriage of a freight train, Roland and his friends decide to jump from their hideout onto the back of the lorries travelling close to the railway line.

To assist in their bid for freedom you must help them leap across the two lines of busy traffic, to reach their final destination.

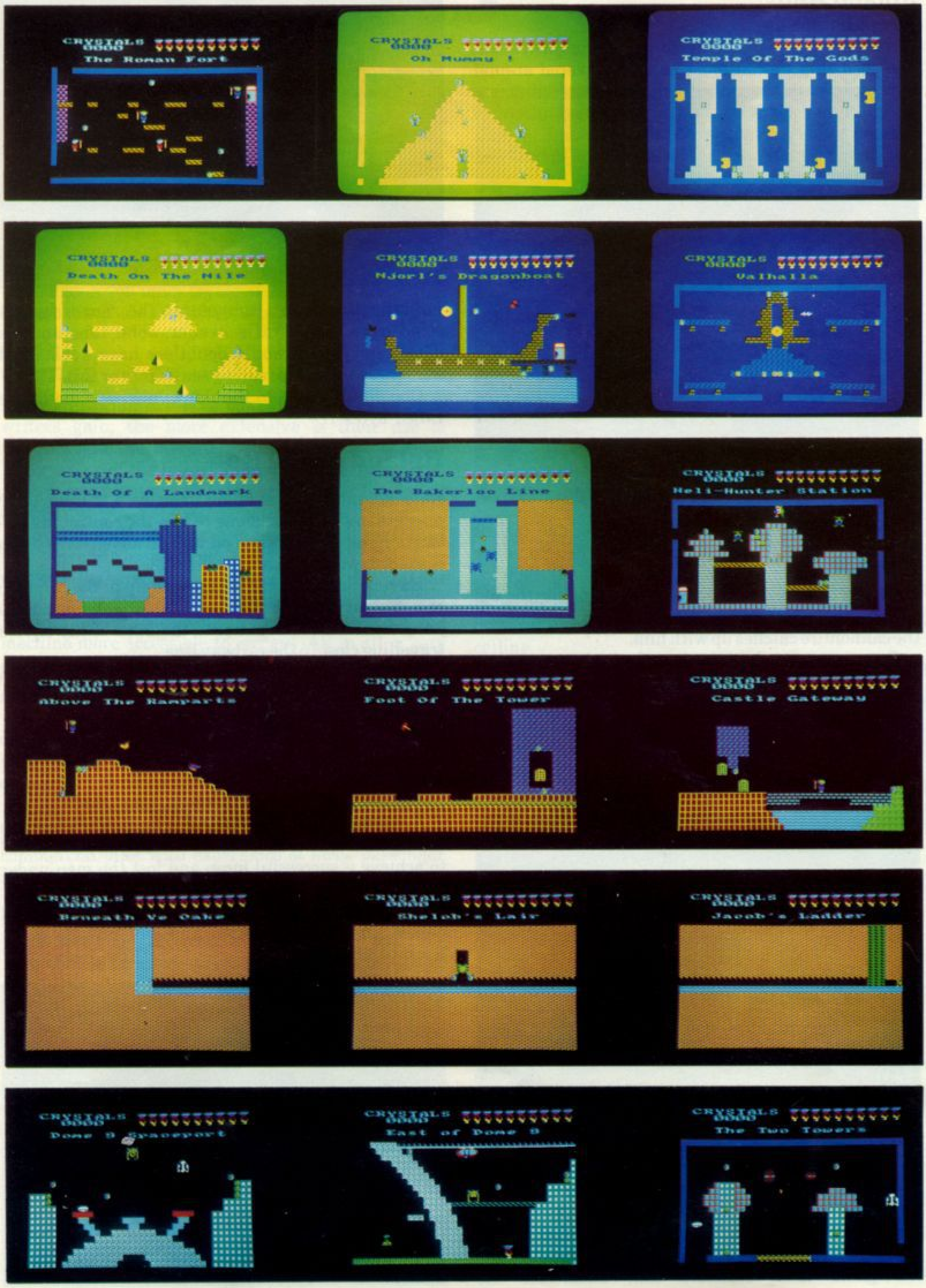
Not an easy task, since it takes time and practice to master the timing of each jump. This can be made easier however, by adjusting the speed of the train to correspond with the speed of the moving traffic.

A 'flashing' man indicates that he is ready to jump but be careful, if a short bleep occurs you have failed to achieve a successful jump and lost the man under the wheels of a passing vehicle.

Following the high standards of previous Roland games this is no exception and will provide many hours of amusement.



A selection of screens from Roland in Time



Game of month

Roland In Time

Gem

A 53 screen extravaganza, cast in the Jet Set Willy mould and featuring our Hero, the indominatable Roland. Like many good arcade games, the instructions and controls are simple: collect the crystals, avoid the things that wobble and move, and don't trip over in the streams.

The plot is a little more involved, since the evil Maestro has pinched our Hero's energy crystals and scattered them through various time zones -starting with a dalliance in Norse times. Which reminds me of a very old joke, in fact it was discovered in the frozen pocket of a Viking recently dug out of a peat bog in Northern Norway. Archaeologists claim that he died of hysterical laughter. Judge for yourself:

There was this rampaging Viking about to set off to England on another trip of rape, pillage and general ravage. As he strolled out the door of the roughly hewn Norse cabin, his wife called out after him:

"Hengis dear -could you resist the temptation to bring back any more ravaged wenches, treasure chests and other clutter?. What we badly need is a new sink."

As luck would have it, Hengis was a trifle short sighted, and as he rampaged with his chums through the East Anglian countryside, he stumbled across a building site and spotting what he fondly imagined was a rather neat sink with a carrying handle attached, he gathered it up to take back.

Upon returning to his roughly hewn Nordic abode, his wife was waiting to receive her present when she spotted what he was carrying and cried out in despair at yet more unwanted junk from the Brits. She explained carefully that what he had collected was not in fact a sink, but a brick layer's hod.

"Ah well, m'dear", he cackled, "you know what they say.... a hod's as good as a sink to a blind Norse."

Ahem ..... on with the plot. Having collected the crystals from this particular era by trekking through a series of screens, Roland returns to his time machine (a telephone box, now fancy that!) and by selecting a new time zone, you can propel him to Ancient Egypt, Roman times, Medieval times, the Industrial Revolution, Modern Times (including a scene down at the DHSS) and thence to future times, culminating with a forboding series of post nuclear tableaux.

The action is highly polished, with smooth sprite movements, and no bugs that we have found yet. Some of the crystals can only be reached by using 'hidden' escalators and stairways, and it's not always obvious if a shimmering vertical column is an escalator that will carry you aloft, or something unpleasant that will zap you. As with all good explorations, half the fun is finding out which snake bites are poisonous.......

Positioning to make jumps can be crucial to the nearest pixel, so a little practise will be required to tune the reflexes and judgement. You can enter the game at any one of the 10 time zones

You must visit the computer shop, and don't forget to climb up the mast of Njorl's Dragonboat. You won't find the sink, but it's well worth the trip. The shots of some of the many screens tell the tale better than words:

And you simply cannot review a Gem game without a special mention for the sound track. Roland in Time opens to the strains of something very reminiscent of a well known TV series, and then proceeds through the game with 'I love to go a wandering' rattling the senses. I am pleased to say that this feature can be toggled on and off by pressing the **[ENTER]** key.

Adventures

Most of you will know about adventures. They are a very particular genre of game that you either love or hate. They are not games to be played for a five minute burst of interstellar blood and guts, but thoughtful games where the user plays out the role of an explorer seeking something or other (usually treasure) and avoiding a sticky end.

Adventures are generally conceived as more wholesome fodder for the computer user than the junk food of arcade shoot-ups, and whilst this may not persuade those of you who like your helpings of chips, you should not dismiss adventures as 'boring' until you have tried them out properly.

That said, I'm pleased to say that the CPC464 has attracted what are generally regarded as the best examples of the genre: Abersoft's 'Classic Adventure', and the Level 9 series that is widely regarded as the ultimate text adventure collection. There is much scope for indifference in text adventure writing, since once you have written one, it can be very tempting to change the text strings and leave it that.

Nemsis software offer the Trial of Arnold Blackwood, which may even have been the first CPC464 adventure, since we recall spotting ads for it a long while ago.

Graphic adventures provide a useful cross between arcade games and text adventuring - but those of us who first played Dungeon adventures on the early CP/M S100 micros may prefer to have the effort expended in evocative descriptions of the locations rather than devote memory space to moving matchstick figures across a laboriously drawn picture.

Speed of response is the thing. A good adventure will take hours if not days to explore properly. It's more fun spending the time playing the game rather than waiting for the screen to be drawn. After a few visits, the same scene can become very tiresome indeed.

Classic Adventure

Abersoft

Like the name suggests, this is the micro adaptation of the classic mainframe dungeon adventure that started it all. It's a must for any adventurer's collection -and the 'reference' work for the novice who wants to find out what adventure is all about.

The response is always immediate, and the descriptions of the many locations through the mystical caves faithfully follow the original. Commands are typed in, to proceed in various directions, gather treasures, deal with the elves and so on.

Classic adventure has a good range of responses to unexpected commands. Rather than a simple 'Eh?', or 'please be more specific' - the reaction to suggesting that the snake should be eaten is rather more spontaneous.

And should you ever need to be warned that the 'Wizard is watching' - well you have been naughty, haven't you?

Collosal Adventure

Level 9

This is Level 9's version of the classic adventure, and behaves in a very similar way except that one of the treasures has been moved, and one of the essential objects (you have things like lamps, keys, bottles, birds in cages) is hidden. The dialogue with the computer is a shade less imaginative than Abersoft's Classic at times (you can do the most appalling things to the dwarf without being told off!).

I couldn't find the cage - but then again I must confess that I haven't had enough time to play it properly.

A nice touch in the Level 9 games is the coupon for a clue. If you get stuck (If??? you get stuck Ha!), describe the location and they'll send back a clue. They don't publish the 'phone number, and I can't say as I blame them. You can save your position in the game to tape and start where you left off the next time (but you lose points for this expedient).

Like they say in the very comprehensive booklet accompanying the game and setting the atmosphere, "almost everything in Collosal Adventure has a purpose". It may take you a long time to work out what it is, but the net result is probably far more satisfying than any number of alien shoot ups.

If you want to find out what the addiction of adventure is all about, buy these two before forming your opinion on anything else. They are quite simply superb .... if you like this sort of thing.

Lords of Time

Level 9

No time to review this game this issue - but with phrases such as:

```
"LOOK IN COFFIN"
"WEAR HAT"
"GIVE DRINK TO BARTENDER"
```

amongst the summary of possible instruction phrases, it seems inevitable that a fuller report will be forthcoming shortly. Any offers?

The Trial of Arnold Blackwood

Nemsis

Another text adventure, but this one uses the windowing feature to good effect, and provides a summary of the last moves made that might be frowned upon by afficianados, but found very useful. That said, the Trial of Arnold Blackwood comes well within the rules as laid down by the Campaign for Real Adventures, and is a very worthwhile addition to the adverturer's library.

There's a nicely atmospheric use of sound, and the scene is accurately drawn in the player's mind.

STOP PRESS

Watch out for these other CPC464 titles coming to your screen shortly....

Starwatcher - *The complete astronomical training and applications program, complete with real time plotting of the sky*

Masterfile 464 - *The superfast in-RAM database program, developed by Campbell systems to take advantage of the CPC464's many facilities.*

Snooker - *possibly renamed 'Roland on Cue' by the time it's released. A superb snooker simulation complete with a genuine sliding scoreboard!*

American Football - *From Argus Press Software. If you like the American Football series on Channel 4, you'll love this.*

Amsword - *A full review of the program many of you have been asking for, written by a novice word processor user. We promise to present an unexpurgated opinion.*

Galaxia - *Kuma's colourful sideways Galaxians. Probably the most elegant interpretation we've seen for the CPC464.*

STOP PRESS

INTERFACE

In this interview we talk to Nick Lightowler, the Marketing Director responsible for home computers for the retail giant, Comet. The genial and much-travelled Nick is a self-confessed enthusiast and freely admits that any new and worthwhile electronic development inevitably finds its way into his office - and is only released with some reluctance to the company's research staff for assessment. So we posed him a few questions about home computers in general, and about the CPC464 in particular...



Nick Lightowler, the Marketing Director responsible for home computers for the retail giant, Comet.

Q. *Well, Nick, you and your team select the computers that go on to Comet's shelves; just how selective are you?*

A. Very. In fact, I think you'd be surprised! You see, Comet is very proud of its reputation for service - and we guard that reputation jealously. This is why we have invested heavily in our own test laboratory. Whenever a new product appears, we check it out thoroughly in the lab to ensure that everything meets our own high standards. These tests are tough on the equipment, but we have to be sure that it performs in extreme conditions. The last thing we want is poor quality products on our shelves, because this reflects badly on us. And it doesn't matter whose brand name is on the product... everything we sell has to pass our tests.

Q. *You say your standards are very high, Nick, but do you ever reject any products?*

A. Our standards are a good deal higher than the minimum standards laid down by the British Standards, so the answer to your question is yes - frequently. Something like 40% of the products sent for testing are rejected.

Q. *On what basis are they rejected?*

A. At first sight we establish whether we feel it represents value for money; if it passes that test then the lab will evaluate it for safety which we rate as very important, specification match, standards of construction and lastly serviceability, and by that I mean should the product need attention, how easily and effectively it can be serviced.

Q. *So what is your assessment of the CPC 464?*

A. Well, first of all we sell the CPC 464 - so I think that answers part of your question. As an enthusiast I am extremely impressed with the hardware, and the fact that it is so user-friendly. It really is a joy to operate, and virtually anyone can 'drive' it after only a couple of hours of familiarisation. The in-built datacorder has a much faster than average read and write rate when loading or recording programs and data; an advantage everyone will appreciate. Its success in sales terms is due in no small part to Alan Sugar (MD of Amstrad) and his team, who identified the gap in the market for a complete computer system. The CPC 464 has filled this gap... I suppose you could call it a complete computer package!



The Comet test laboratory, where every new product is thoroughly checked before being passed suitable for sale to Comet customers.

Q. *A common criticism of retailers is that they don't carry the full range of software. Is this true in the case of Comet?*

A. No, Comet is a major distributor for Amstrad and Amsoft, and as such we stock the full range in all our branches nationwide. Here again, each item of software is thoroughly tested by our own technicians to ensure that it really works. Then, and only then, does it go on to our shelves.

Q. *What about after-sales service?*

A. Quite frankly, it's the best in the business. Since we were founded in 1933 we've put service first, last and all the time in order to give complete customer-satisfaction. Every item bought carries our Chairman's promise of 12 months' free service, including parts and labour. If your purchase develops a fault you simply return it to us, and we put it right. It doesn't matter where you live, whether in Aberdeen or Torquay, because we have branches all over the UK. We offer even stronger long-term product protection, too - an option to extend the normal guarantee to five years for just one payment at the time of purchase. It's a scheme that can save the customer a great deal of money.

Q. *Finally, how do you see the future of the home computer?*

A. As I say, I'm an enthusiast - but I'm a businessman too. I think the demand is going to be tremendous, especially as children educated in computer studies bring a new awareness into the domestic market. Regarding the development of the computer itself, I see it controlling domestic functions such as heating, lighting and security systems - possibly linked to TV monitors. I also see personal voice patterns being used to operate many of the functions... even more sophisticated software and peripherals. This is a computerised world, and we have to come to terms with it - manufacturer, retailer and domestic user alike. The benefits to be gained are tremendous, and correctly applied they can effect a vast improvement in the quality of all our lives.

Directory-1

Here's some of the software we've been sent for the CPC464. Please excuse the disorderly classification in this first issue. Please contact the vendor directly for further details. Please note that CPC464 User runs this listing as an information service to readers and accepts **no responsibility or liability whatsoever** for the software. *Caveat Emptor.* Prices shown include VAT to the best of our knowledge. We reserve the right to refuse admission to this list without giving our reasons.

Vendor	Program title	Description	Cost
Eborsoft, 81 Hull Road, York YO1 3SS	Various Dice Games	Simpler for under 10 player's	£11.00
Pride Utilities, 7 Chalton Heights, Chalton, Luton, Beds LU4 9UF	Zedis	Editor and Disassembler	£6.95
N Attwood, 25a Albemarle Road, Churchdown, Gloucester	Pontoon	Card game with sound	£3.00
David Computer Software, 38 South Parade, Bramhall, Stockport	Math's and Physics	O-Level	£6.00
	Sound Effects	Bells, Horse'e etc	£5.00
	Printer Package	Typewriter Facility on screen	£5.00
	Arnold Answers Back	Conversation Program	£5.00
	Agent 007	Secret agent	£5.00
	Entrepreneur	Manage a company	£5.00
	Beanfeast	'Beans' Boardgame	£5.00
	Stock control	Stock controlling	£6.00
	Report writer	Word Processor	£8.00
	Data Bank	Database	£10.00
	Invoice Control	Records invoices etc	£6.00
	Club secretary	Names and Address manager	£10.00
	Sundry Creditors	Balances	£6.00
Cable Software, 52 Limebury Road, Luton, Beds	Trace Race	Arcade reaction game - includes two player twin joystick option	£6.95
Timeslip Software, Stoneyburn Workshop, The Old Primary School, Main Street, Stoneyburn, West Lothian	The Moors Challenage	Board Game	
	The Royal Quest	Adventure Game	
Haresoft Micro's, P O Box 365, London, NW1 7JFD	Hareraiser	Treasure Hunt with prize	£8.95
Camel Micros, 33a Commercial Road, Weymouth, Dorset	Grasp	Graphic data presentation	
Nemesis Software, 10 Carlow Road, Ringstead, Kettering, Northants NN14 4DW	The Trial of Arnold Blackwood	Adventure	£5.50
	Arnold gose somewhere else	Adventure	£5.50
Solid Software, 35 Melville Road, Bispham, Blackpool, FY2 9JF	House of Horrors	Graphics adventure/ arcade elements	
Spectradraw (Dept CU), 1 Cowleaze, Chinnor, Oxford OX9 4TD	Amstradraw	Pools prediction program	£9.95
Evesham Micro Centre, Crown Courtyard, Bridge Street, Evesham, Worcs	Speedmaster	Tape backup utility	£9.95

BOOKS

Title	Author	Publisher	Price
Amstrad Computing with the CPC464	Ian Sinclair	Granada	£6.95
Sensational Games for the Amstrad CPC464	Jim Gregory	Granada	£5.95
40 Educational Games for the Amstrad CPC464	Vince Apps	Granada	£5.95
The CPC464 Advanced Users Guide	Mark Harrison	Sigma	TBA

Apologies for the others tht have not been entered this time: remember to get the programs to us in good time, please include the price, and your telephone number. We can only list your program in the directory section if you send a copy to: CPC464 User Directory, Brentwood House, 169 Kings Road, Brentwood, Essex

This facility is quite independent of any other software dealings that may transpire at the above address - so please don't assume your software will be listed if a library copy is not specifically addressed to the Directory!

In the making:

CPC464 user examines the background to some of the more notable software products, and traces progress with their authors. This issue we examine a utility that's been a while gestating, but what a beautiful baby....

DJL Software's Screen Designer

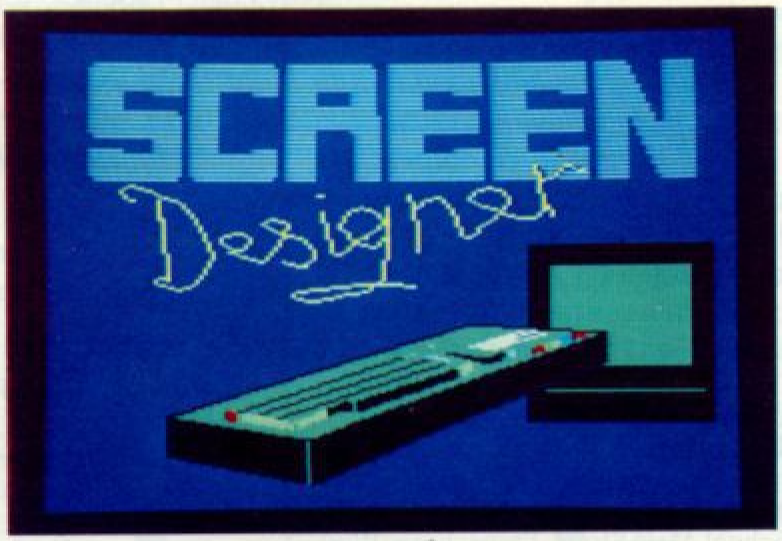
Feedback from readers and users indicates that CPC464 users are generally a lot more interested in using their computers for applications programs than originally anticipated by Amstrad. Those who masterminded the design are not too surprised many owners are quickly enticed into wanting to find out more about the machine and its capabilities - the designers all understand what appeals to a hacker, and the CPC464 hardware and software is rich with nooks and crannies just waiting to be discovered.

Programmers who start to write for the machine can fall into these enticing and carefully set traps, and may end up writing a complete 'symphony' when the original intention was simply to bash out a jaunty tune. Two such victims are David and John Looker, a father and son team who operate under the name of DJL software, and whose expertise as contract programmers is apparent in various offerings for the Spectrum, notably Ms. Pacman from Atarisoft, which must rate as the most accomplished Pacperson conversion yet seen.

Before getting stuck into some games design work, DJL thought they would run up a few utilities to make the development of the screens a little easier - amongst which is Screen Designer. What transpired is probably the most feature packed and accomplished drawing and illustration program yet devised for a home micro.

Screen Designer is a machine code utility that provides all the tools you could possibly want, to design a screen display for the CPC464. It also provides some you might never have thought of - but once discovered will become an integral part of the artist's equipment.

At the time of writing, the finishing touches are going in to provide for full use of the disc option - and by the time you read this, the program is likely to be just available.



The facilities available are:

Screen mode selection
Colour set selection
Pixel plotting in any colour
Line drawing
Circle drawing
Area fill
Text printing at any pixel location
Text merging with background
Plotting with the character cursor
Stipple character printing
Graphics character store and print (including multicolour 'sprites')
Colour wash (change a nominated colour to another over a defined screen area)
Screen scrolling by pixel or character
Magnification by 4 or 16 times
Save/load screen and graphics characters

Appreciating all this requires a few words of explanation, so it's a good job that the explanatory booklet supplied with Screen Designer is very comprehensive. The operations menus are simple enough, linked by the common theme that you use the cursor keys to select the operation, and the **ENTER** key to execute it. Pressing the space bar abandons most things.

IN THE MAKING continued...

Virtually the whole keyboard is taken up with the operation selection (shift and control functions are also required to fit it all in!), and the direction of the flashing pixel cursor is determined by a cluster on the numeric keypad that provides for smooth diagonal travel. In all, operation can seem daunting - a bit like the newcomer faced with the ubiquitous Wordstar. Unlike Wordstar however, intuition takes over fairly rapidly and you will only need to refer to the manual for the tricky bits like stipples and graphics character functions.

What all this adds up to is best illustrated by a picture or two. It's a shame we haven't had the time to do anything more dramatic than those accompanying this piece - but it may inspire others to perform greater things - and it goes without saying that the best screens submitted each month will be published, and their originators will be rewarded in some suitable manner.



We show a step by step progression of the screen designer title picture being embellished a little. That strange whirring noise you can hear is Leonardo da Vinci spinning in his grave. The program operates by maintaining a dummy screen image in memory (not screen memory) so that 'accidents' can be abandoned without doing any harm to the permanent image -and also so that parts of the picture can be magnified and displayed independently. With the precise pixel graphics of the CPC464, it is important to be able to home in on every single pixel to produce perfect results.

Screen designer allows the user to redefine the pens and paper colour for each mode over the range available on the CPC464 - and this information is stored along with the actual image when the screen is saved. The colour set can be redefined halfway through a picture - for example if you want to swap all the red for magenta, or the black for dark blue. Inks can be flashing at a user defined rate if required.

The default settings are generally quite suitable for most work, and there are enough shades of blue and cyan for the most discerning of landscapers amongst you.

Disc delights

Since the CPC464 uses a full 16K for the screen display, a screen requires 8 blocks plus any other setup instructions, which is why the loading screen for cassette based programs tend to be rather bland text-only affairs. However, with a disc drive, loading a screen takes only a second or two, and with Screen Designer to assist, you should look forward to some much more exciting title displays when disc software begins to flow.

You can load the screens saved by Screen Designer directly to the screen as required, and then use these as the scenery for other programs and games. Imagine graphical adventures pulling in detailed screens as overlays from disc. The combination of a really low cost disc system and the graphic precision of the CPC464 presents an unavoidable challenge to adventure publishers.

And then there's talk of light pens from a number of sources, athough for the best precision, keyboard control is still likely to be best. It takes a while to master the art, but it is surprisingly easy with a few evenings of practise.

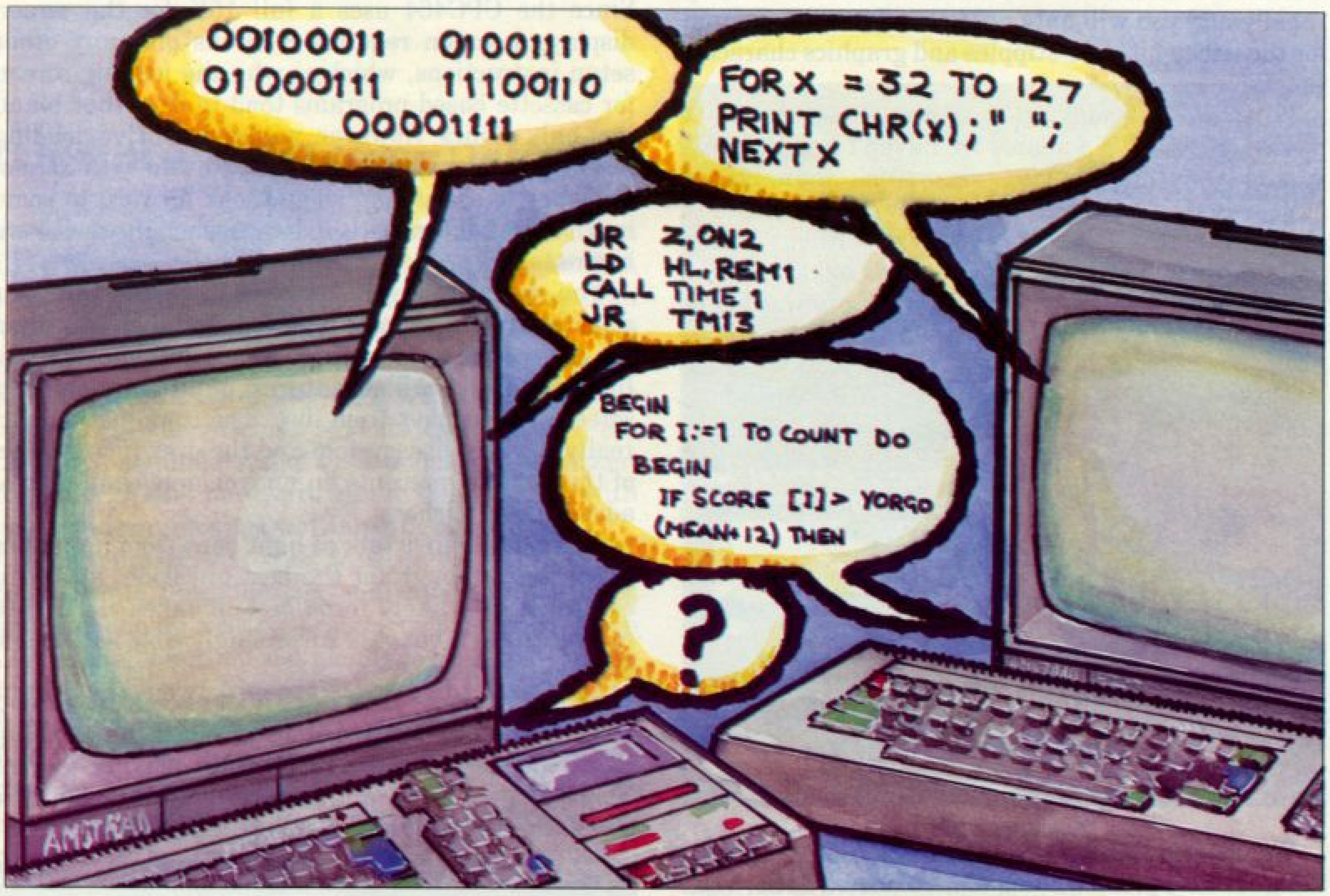
Screen Designer unleashes a lot of creative talent. Most of those who tried it here ended up spending more time designing screens than playing games. There may not be a high score table - but the satisfaction available is of a totally different order.



If Amsoft utilities can continue in the same vein as Screen Designer, then the CPC464 user is set for a series of ever more enticing treats. And the best of it all is that you could not do half of it on an MSX machine!

Is There Life After BASIC?

There's more ways than one to skin a cat, and probably hundreds of ways to program a computer. This article is about computer programming languages - the other ones, not the old favourite, BASIC, that everybody knows and loves. Elsewhere in this magazine, CPC464 owners will find an article about the Pascal programming language that gives important background material on this powerful language, but for the present we shall take a broader view of your programming choices.



The Tower of Babel

There are literally hundreds of computer languages, some familiar names, some you may never have heard of. Here are just a few: FORTRAN, RATFOR, ALGOL, ADA, MUMPS, FORTH, LOGO, PROLOG, APL, PL/1, LISP, COBOL, BASIC, C, VALID, SNOBOL, NEBULA, BLISS, MODULA-2 and SL5. Why, I hear you asking yourself, are there so many different languages? What's wrong with good old BASIC?

The answer, in a word, is that there's nothing wrong with BASIC per se, but that other languages can do certain things better than BASIC can. Here's why.

The Central Processing Unit (CPU) at the heart of every computer is nothing more than a complex set of switches and temporary storage cells. The actual sequence and configuration of the switching is determined by instructions that are fed to the CPU from the program. These instructions are in the form of electrical signals representing ones and zeros (the presence of a voltage corresponds to a 1; the absence of a voltage corresponds to a 0). It is a complex philosophical issue, and this may not be the proper place to go into it in depth, but these combinations of ones and zeros, although conveniently thought of as binary numbers, are merely symbols that are manipulated by the computer in a strictly determined way. The action of any given set of symbols is absolutely known and predictable, having been designed into the CPU by its creators.

Is There Life After BASIC cont...

When we want to make a computer do our bidding, we must present it with the symbols that will make it do what we want it to do. Strings of binary numbers are not exactly the most memorable of symbols, though. Here are just two for you to ponder: if the 'number' 11101011 is fed to a Z80 (the type of CPU used in the CPC464), it causes the contents of two memory cells within the CPU to be swapped. If the combination 00111100 is presented to the CPU, the number stored in a temporary memory location called the accumulator is increased by one (i.e. has 1 added to it). All in all, there are over 200 such instructions understood by the Z80. This is the 'language' the Z80 'understands' so all programs ultimately have to be presented to the Z80 (or any equivalent CPU) in this form.

Symbols or instructions that can cause a CPU to perform specific, known actions are called machine language when strung together to make a program. It is obvious that 'machine' is a very appropriate word. Here is a short part of an actual Z80 program as seen by the CPU:

```
00100011
01001111
01000111
11100110
00001111
```

Part of a machine language program

Most inconvenient! But it is possible to substitute other, more meaningful symbols, and then have another special program to translate the more meaningful symbols into the code the machine can understand. Here's a sample of the use of more 'human oriented' symbols used in a program:

```
FOR X = 32 TO 127
PRINT CHR(X);" ";
NEXT X
```

Part of a BASIC program

To the average man in the street, it would not look a lot more informative than the list of binary numbers we saw earlier. But anyone who has ever programmed in BASIC will instantly recognise it as part of a program that 'prints' characters on the computer screen. Some programming languages veer towards the side of incomprehensibility, others are far more like ordinary English. Here are two further examples:

```
JR    Z,ON2
LD    HL,REM1
CALL  TIME1
JR    TM13
BIT   1,(IX+REMO)
```

Part of an assembly language program

```
BEGIN
 FOR I := 1 TO count DO
  BEGIN
   IF score[I] > yorgo(mean + 12) THEN
     result := 'GREAT'
   ELSE IF score[I] < yorgo(mean - 12)
     THEN
     result := 'poor'
   ELSE
     result := 'MODERATE'
 END
END;
```

Part of Pascal Program

The first of these two examples is called assembly language (or simply 'assembler'). It is clear to see that this is not particularly easy to understand. The second example is written in the Pascal language. This is a little easier to follow, and you might be able to tell that it has something to do with scores and results (a game, perhaps?).

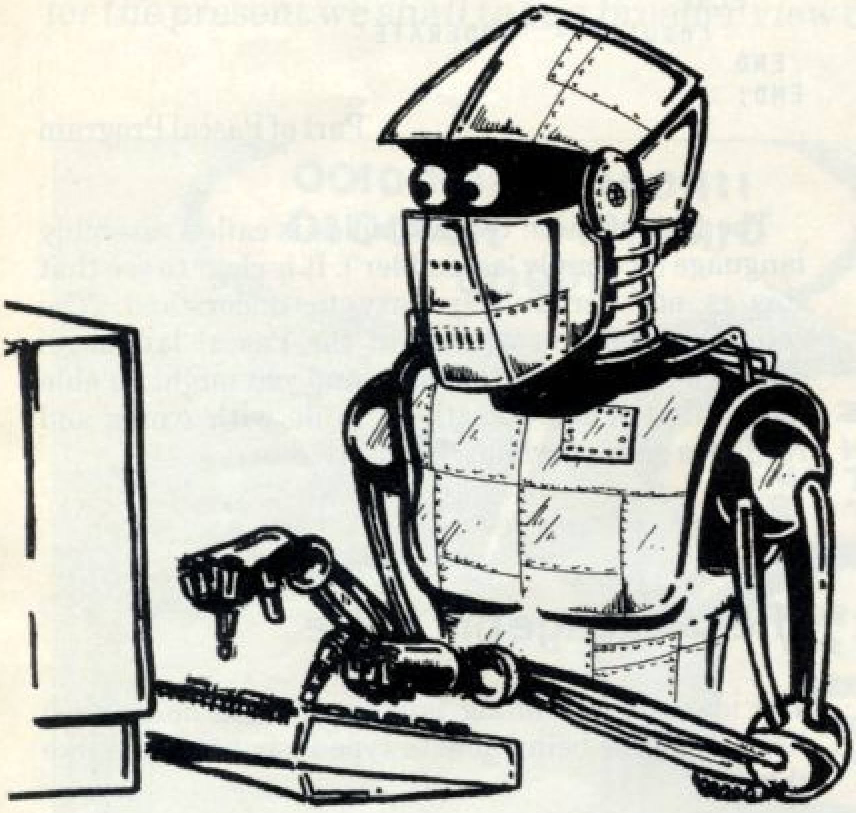
The Language of Choice

The ideal programming language would be English itself. Imagine being able to type instructions in like this:

KEEP A RECORD OF MY BANK BALANCE. ALLOW ME TO ENTER THE AMOUNT OF EACH CHEQUE WITH A RECORD OF WHO IT WAS TO AND WHAT IT WAS FOR. IF I ACCIDENTALLY TYPE IN LETTERS WHERE I SHOULD TYPE NUMBERS, WARN ME WITH A BEEP AND A DATA TYPE ERROR MESSAGE ON THE SCREEN.

Unfortunately, natural languages (as human languages are called) are far too variable and imprecise to be used as input to computers, so simpler, more rigidly defined languages have been created. Because different people want to use computers to do different things, the programming languages that have been developed have been evolved along different paths. Thus, FORTRAN (one of the earliest languages) was written specifically to simplify the programming of mathematical operations. BASIC was written to be easy to learn and use - that probably explains why it has become so popular. Pascal, another popular language, was developed to teach computer science students 'good' programming techniques (there's more on the subject of 'good' or 'structured' programming in the article on Pascal).

Is There Life After BASIC?



Automata, Robots and Machines That Think

Some languages were created under somewhat unusual circumstances. FORTH, for example, was developed by a Mr. Charles H. Moore so that he could write programs in it to control the movement of a large telescope. His guiding principle was 'Keep it simple'. Here's a fragment of a program written in FORTH:

```
: CLEARSCREEN  12 EMIT ;
: LEADIN       27 EMIT ;
: CLREOS       LEADIN 74 EMIT ;
: CLREOL       LEADIN 75 EMIT ;
: HOME         LEADIN 72 EMIT ;
: GOTOXY       LEADIN 61 EMIT SWAP 0
               MAX 79 MIN " EMIT
               0 MAX 23 MIN 32 " EMIT ;
```

Part of a FORTH program

If it doesn't look simple, that's only because it's unfamiliar. It allows some very fancy programming and is used to program most of those arcade action games.

Other languages were written specifically for 'artificial intelligence' research. These include LISP, LOGO and PROLOG. These belong to a class of so-called list processing languages and they are useful not only as good languages to learn programming on, but also for writing programs that simulate intelligent behaviour and decision-making. Here's a sample of a program written in LISP and one written in LOGO:

```
-> (setq c (cons jam '(cdr x)))
-> (setq b (cons 'jam (cdr x)))
-> (setq a (reverse b))
-> (cdr (cdr a))
```

Part of a LISP program

```
TO BOX
REPEAT 4 [FORWARD 50 RIGHT 90]
END
TO STAR
REPEAT 12 [BOX RIGHT 30]
END
```

Part of a LOGO program

Strengths and Weaknesses

Your CPC464 is one of the most versatile computers around. Apart from a fast, powerful BASIC, which comes with the machine, Pascal is available right now. So, too, is LOGO, the artificial intelligence language. Due out any time now is a brand new version of FORTH and for the real enthusiast Amsoft has announced that development of the C programming language is nearing completion and will be ready for release soon.

It isn't possible to undertake a full critique of the strengths and weaknesses of these languages here because justifying our assessments would take up too much space; however, the following would be accepted by most people in computer programming as a fairly even-handed summary.

BASIC

Pros: Designed as a teaching language, it is very easy to learn. Debugging faulty programs is straightforward.
Cons: Can encourage very bad programming techniques. Programs execute slowly and take up a lot of memory. Many different dialects create compatibility problems.

PASCAL

Pros: An 'elegant' language that encourages clean, logical programming habits. Being a compiled language, programs run quite fast. Programs are 'self documenting' (easy to read).
Cons: A very strict, inflexible language that doesn't allow for 'second thoughts'. Fairly difficult to learn. Writing programs and debugging ones that don't work is very time consuming.

FORTH

Pros: The language is very concise and enables fast, compact programs to be written - ideal for systems with limited memory. Uniquely flexible, new 'tailor made' commands can be added to the language at any time.
Cons: Not easy to learn and notably unreadable. Uses reverse Polish notation and integer arithmetic.

LOGO

Pros: Designed partly as a teaching language, partly for artificial intelligence work, it combines great power with ease of use (even a child can write programs in it).
Cons: Very slow and therefore unsuitable for writing applications or systems software.

C

Pros: A fast, powerful language ideal for 'systems' programming such as writing operating systems, compilers etc.
Cons: Easy to make mistakes in. Fairly difficult to learn. Not suitable for beginners.

The Right One for Me?

This brief round up of popular programming languages should have convinced you that there's a language for every occasion. The well-rounded, sophisticated programmer of today will know more than one language. As with golf clubs or fishing rods, he will choose the right tool for the job: BASIC for the odd bit of 'quick and dirty' programming, FORTH for those special jobs where speed is at a premium and memory is scarce, LOGO for teaching the kids, Pascal for commercial software or very long programs, and C for really getting in under the bonnet.

Dear CPC464 User ....

Send your fan/hate mail to:

The Editor
CPC464 User
Brentwood House
169 Kings Road
Brentwood
Essex CM14 4EF

All letters published get a free piece of games software - but only if you claim your prize once you've read your letter in CPC464 User!

Sir!
Having just received issue one of the CPC 464 User I have finally decided that now is the time to write to you pointing out my view of 'Arnold'. I'll most likely type too much to get a mention in the letters page, but I'd like to give you the 'benefit' of my thoughts all the same.

First, the Users' mag. An excellent idea. All too often with computer manufacturers it's a case of "right, we flogged off the product now don't bother us with your problems, you're on your own mate!". It's nice to see a company prepared to communicate with the mere customer. But, I have one reservation, "Official" publications can tend to be a bit too biased. Just how impartial can we expect the reviews to be? I'd much rather have a magazine that I disagree with on occasions than one that extols every single product regardless of its faults. Another slight point, this first copy is free isn't it? 'Cos I didn't pay for it! If so, I hope that this is the only free issue, as I'd hate to pay my membership only to discover everyone's getting for free what I've paid for!

On the subject of the membership, phew! The best part of twenty pounds is a bit steep! I suppose you can justify the cost and I'll end up joining (soon as I have the cash!) but if you'd cut out the frills you would have made membership more accessable. Another thing, if I want to get the benefit of the discounts available through membership, do I have to first of all apply for membership, wait 28 days and then post off my order along with membership number only to wait another 28 days before actually getting any visible proof of the benefits? Or can I omit my number on my first order, proof of membership being the fact that it's ticked off on the form along with the cash?

Now, on to good ol' Arnold himself! Brilliant computer, shame about the manual. The fact is, although the manual would be helpful to the complete beginner, and is about average as far as explaining the peculiarities of Locomotive Basic, it is a dismal failure as far as explaining what goes on inside the box. Ah, you point out, there's the Concise Firmware Specification! You bet there is, at another £20 there is! It may go into more depth than any other book on a computer, but I'd have prefered more of it in my manual. I even got in to the position of having to use the Spectrum's manual, and it's far from perfect, to explain something about the CPC464 (Same Z80 chip, you see.)

The computer I have very few quibbles about, it's indeed a well thought out computer. But of those few quibbles; along the right hand side we have both the volume control and the on/off switch, both have a serrated edge. Yes, you've guessed it, twice I have reached round to adjust the volume and ended up turning the computer off! I would suggest you make them different in some way in later models. Another thing I dislike is the lack of any border indication while loading. Maybe it's just me being used to the Spectrum, but I feel very much in the dark about what's going on between computer and datacorder (bit of a gimmicky name that I think). I would also have liked the chance to have control of the tape recorder without complete co-operation of the computer for cueing up and the like. But they are minor points about a very good computer, any other problems I have had are my own fault by being too used to the Spectrum and getting my operations confused. Arnold has just pointed out to me just what a toy the Spectrum is.

G.S. Sinclair

Ahem. Well, as you can see, we're editorially independant from the intrusion of Amstrad. (This may be my last issue...) The points you raise are very valid, and very important. We need much more independant input from readers and users, and although it's happening gradually, it's not enough. I know you are all too busy programming your CPC464 to write, but please find time.

The Club Membership fee is substantial, because we want to provide a substantial service to members. We think that 100% of members will buy disc drives once they see what value and

Continued page 38

KINGDOMS

Mark Harrison provides the first example of the 'population simulation' type of game seen in these pages. It's a brand of program that slots somewhere between an adventure and a strategy game, and has the distinct advantage that it is the type of program example much beloved by Basic programmers since it can be nurtured to grow and expand in very many directions.

You can add elements to the 'circumstances', illustrate with graphics and so on. See if you can simulate a field of growing corn. The extensive editing facilities of Locomotive BASIC will help a lot.

Beware of reverse jumps, and may the GOTO be with you......



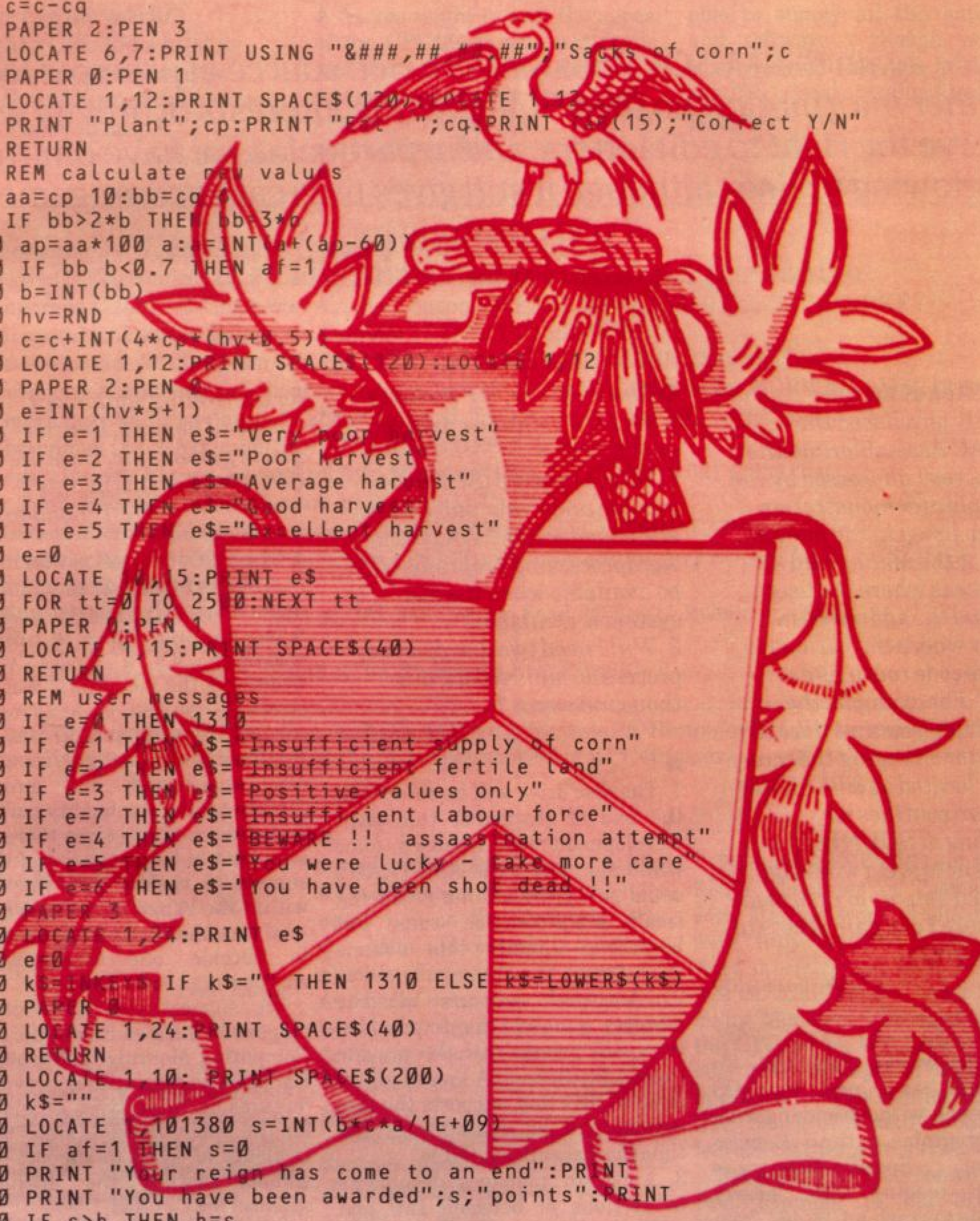
```
10 REM *****************************
20 REM *    KINGDOMS  26:AUG:84    *
30 REM *---------------------------*
40 REM *       MARK R HARRISON     *
50 REM *****************************
60 REM
70 ON BREAK GOSUB 1490
80 ON ERROR GOTO 1500
90 GOSUB 320
100 GOSUB 1190
110 IF k$="y" THEN GOSUB 480
120 INK 0,1:INK 1,24:INK 2,22:INK 3,3
130 PAPER 0:PEN 1:BORDER 1:MODE 1
140 FOR y=1984 TO 1993+INT(RND*3)
150 cc=c:af=0
160 GOSUB 650
170 GOSUB 740
180 GOSUB 1190
190 LOCATE 1,12:PRINT SPACE$(240);SPACE$(240):LOCATE 1,12
200 IF k$="n" THEN c=cc:GOTO 160
210 GOSUB 970
220 IF b=0 THEN 290
230 IF af=0 THEN 280
240 GOSUB 650
250 e=4:GOSUB 1190
260 IF RND<0.75 THEN e=5:GOSUB 1190:GOTO 280
270 e=6:GOSUB 1190:GOTO 300
280 NEXT y
290 GOSUB 650
300 GOSUB 1350:'end
310 GOTO 90
320 REM initialisation
330 CLS340 INK 0,1:INK 1,24:INK 2,22:INK 3,3
350 PAPER 0:PEN 1:BORDER 1:MODE 1
360 c$= CHR$(164)+" Mark R Harrison   AMSOFT"
370 ck$="KINGDOMS"
380 v$="Version 1.1"
390 a=INT(500+RND*500)        :'acres of land
400 b=INT(2500+RND*2500)      :'population
410 c=INT(75000+RND*25000)  :'sacks of corn
420 e=0
430 RANDOMIZE TIME
440 LOCATE 1,1:PRINT ck$:PRINT
450 PRINT c$
460 PRINT :PRINT"Do you want instructions Y/N"
470 RETURN
480 REM instructions
490 INK 0,13:INK 1,0
```

KINGDOMS cont...



```
500 PAPER 0:BORDER 13:PEN 1
510 MODE 2
520 PRINT ck$;TAB(25);c$ :PRINT
530 PRINT "You are in control of the simple economy of a small
    empire.  Each year, every member of your community requires six
    sacks of corn to provide enough food to survive and is capable
    of planting three sacks of corn.  Exactly ten sacks of"
540 PRINT "corn are required to plant corn on one acre of land.
    Using less than 60% of theavailable land causes some land to
    become barren, similarly using more than 60% of the land
    increases the available arable land."
550 PRINT
560 PRINT "At the start of each year you must decide how many sacks
    of corn you will allocate to planting on the land and to feed to
    the population of your empire.  The amount of corn that is produced
    from the fields is dependent on the quantity"
570 PRINT "of corn planted and the quality of the harvest.  Every
    member of the population who cannot receive six sacks of corn
    will die through starvation while every 5 sacks of corn in excess
    will enable one new person to be born, however the
580 PRINT "population cannot increase by more than three fold.
    If more than 30% of the empires population dies then beware
    of an assassination attempt!!"
590 PRINT
600 PRINT "Press any key to continue in response to any user
    messages at the base of the  screen.  At the end of your period
    of control, a score will be awarded dependenton the quality of your
    leadership.  A record of the best score is kept."
610 PRINT
620 PRINT TAB(15);"PRESS ANY KEY TO COMMENCE  -  good luck!!"
630 IF INKEY$="" THEN 630
640 RETURN
650 REM display screen
660 LOCATE 13,1:PRINT ck$
670 LOCATE 13,3:PRINT "Year";y
680 PAPER 2:PEN 3
690 LOCATE 6,6:PRINT USING "&###,##,##,##";"Population   ";b
700 LOCATE 6,7:PRINT USING "&###,##,##,##";"Sacks of corn";c
710 LOCATE 6,8:PRINT USING "&###,##,##,##";"Acres of land";a
720 PAPER 0:PEN 1
730 RETURN
740 REM data entry
750 LOCATE 1,10:PRINT"Enter number of sacks of corn to:"
760 LOCATE 1,12:PRINT SPACE$(120):LOCATE 1,12
770 INPUT "Plant";cp:cp=INT(cp)
780 IF cp>c THEN e=1:PRINT CHR$(7):GOSUB 1190:GOTO 760
790 IF 10*a<cp THEN e=2:PRINT CHR$(7):GOSUB 1190:GOTO 760
800 IF cp<0 THEN e=3:PRINT CHR$(7):GOSUB 1190:GOTO 760
810 IF cp>3*b THEN e=7:PRINT CHR$(7):GOSUB 1190:GOTO 760
820 c=c-cp
830 PAPER 2:PEN 3
840 LOCATE 6,7:PRINT USING "&###,##,##,##";"Sacks of corn";c
850 PAPER 0:PEN 1860 LOCATE 1,12:PRINT SPACE$(120):LOCATE 1,12
870 INPUT "Eat  ";cq :cq=INT(cq)
880 IF cq>c THEN e=1:PRINT CHR$(7):GOSUB 1190:GOTO 860
890 IF cq<0 THEN e=3:PRINT CHR$(7):GOSUB 1190:GOTO 860
```

KINGDOMS cont...



```
900 c=c-cq
910 PAPER 2:PEN 3
920 LOCATE 6,7:PRINT USING "&###,## ##,##";"Sacks of corn";c
930 PAPER 0:PEN 1
940 LOCATE 1,12:PRINT SPACE$(120):LOCATE 1,12
950 PRINT "Plant";cp:PRINT "Eat  ";cq:PRINT TAB(15);"Correct Y/N"
960 RETURN
970 REM calculate new values
980 aa=cp 10:bb=cq/6
990 IF bb>2*b THEN bb=3*b
1000 ap=aa*100 a:a=INT(a+(ap-60))
1010 IF bb b<0.7 THEN af=1
1020 b=INT(bb)
1030 hv=RND
1040 c=c+INT(4*cp*(hv+0.5))
1050 LOCATE 1,12:PRINT SPACE$(120):LOCATE 1,12
1060 PAPER 2:PEN 0
1070 e=INT(hv*5+1)
1080 IF e=1 THEN e$="Very poor harvest"
1090 IF e=2 THEN e$="Poor harvest"
1100 IF e=3 THEN e$="Average harvest"
1110 IF e=4 THEN e$="Good harvest"
1120 IF e=5 THEN e$="Excellent harvest"
1130 e=0
1140 LOCATE 10,15:PRINT e$
1150 FOR tt=0 TO 2500:NEXT tt
1160 PAPER 0:PEN 1
1170 LOCATE 1,15:PRINT SPACE$(40)
1180 RETURN
1190 REM user messages
1200 IF e=0 THEN 1310
1210 IF e=1 THEN e$="Insufficient supply of corn"
1220 IF e=2 THEN e$="Insufficient fertile land"
1230 IF e=3 THEN e$="Positive values only"
1240 IF e=7 THEN e$="Insufficient labour force"
1250 IF e=4 THEN e$="BEWARE !!  assassination attempt"
1260 IF e=5 THEN e$="You were lucky - take more care"
1270 IF e=6 THEN e$="You have been shot dead !!"
1280 PAPER 3
1290 LOCATE 1,24:PRINT e$
1300 e=0
1310 k$=INKEY$:IF k$="" THEN 1310 ELSE k$=LOWER$(k$)
1320 PAPER 0
1330 LOCATE 1,24:PRINT SPACE$(40)
1340 RETURN
1350 LOCATE 1,10: PRINT SPACE$(200)
1360 k$=""
1370 LOCATE 1,101380 s=INT(b*c*a/1E+09)
1390 IF af=1 THEN s=0
1400 PRINT "Your reign has come to an end":PRINT
1410 PRINT "You have been awarded";s;"points":PRINT
1420 IF s>h THEN h=s
1430 PRINT "The best score obtained today is";h:PRINT
1440 PRINT "Do you wish to play again Y/N ?":PRINT
1450 k$=INKEY$:IF k$="" THEN 1450 ELSE k$=LOWER$(k$)
1460 IF k$="n" THEN CLS:NEW
1470 IF k$<>"y" THEN 1450
1480 RETURN
1490 STOP   :'break
1500 GOTO 70:'error trap
```

QA

Once again the AMSOFT postbag is a rich source of prompts for further information on the CPC464. In the interests of brevity we reserve the right to edit letters, and in particular, we have omitted the glowing praise - although it still gives us great encouragement if you continue to include it when writing!

Q The CALL of the OS

I recently purchased the DEVPAC Assembler/monitor and was very impressed by the the graphics demonstration program listed in the manual. But what the manual did not explain was where the user could find the addresses in memory where the various machine code routines are 'hiding'. For example, the manual told you that the MC routine for changing the screen mode is located at &BC0E but not where routines for INPUTing or SOUNDing a musical note are. I would be grateful if you could inform me as to where I can gain access to these routines.

A D W, Kirkaldy

A In two words: Soft 158. To understand and use the OS correctly and without endangering your programs, the Concise Firmware Specification is essential reading. It's nearly impossible to crash a CPC464 from its on-board BASIC, but when performing machine code programming, you do not have the benefit of the benevolent Locomotive BASIC interpreter peering over your shoulder and preventing illegal operations.

Q *Disc delivery, WP features*

1. When will the disc drive be available?
2. Does Amsword (SOFT164) provide underline, subscripts, and superscripts? What other wordprocessing programs will be available when the disc system is available?
3. Will I need two disc drives to process documents of 2 to 3 thousand words?

M O L, Oxford

A

1. The disc drive will be shipped at the end of November this year. Development was finalised some while ago, and as is AMSTRAD's usual policy, we are not producing small pre-production runs, but launching directly into volume production.
2. Amsword supports all the features you mention - provided that your printer will also provide these facilities. A version of AMSWORD that supports the disc system will be available at the time the discs are available.
3. Amsword 'manages' documents in sections of between two and three thousand words, and over 10 such documents may be filed on a single disc.

Q *Transduction sought*

I need a computer that has a transducer facility ie to be used for controlling equipment - central heating, burglar alarm systems etc. Does the CPC464 offer this facility?

C J T, London N17

A The CPC464 does not include a transducer facility as standard. It's more frequently referred to as an A/D or analogue to digital converter: it's a device which translates the non-digital world of strain gauges, temperature sensing elements and the like into the logic levels that the computer can understand and process. Simply having the facility isn't the end of the matter - since there will also need to be processing of these signals to ensure that they fall within the range of the A/D input -and the whole subject then begins to become one of hardware engineering.

We suggest you look out for magazines such as Electronics and Computing Monthly (published by EMAP) who specialise in providing features on these types of add-ons for the hobby market, since there is plenty of scope to support such add-ons within the operating sytem of the CPC464.

You probably won't have to wait too long before the same bands of add-on suppliers who have provided enlightenment for the I/O ports of other machines, provide a selection of the wares for the CPC464. We hope to be able review them just as soon as we see some.

QA continued...

Q *Where in the world?*
I bought a CPC464 whilst in England, but now I need to know the address of the nearest agent. Can you help?
RS, Belgium

A As you might expect, the appeal of the CPC464 is now worldwide, and there are a large number of overseas agents for the CPC464, here's a brief list for your information. Each one should be able to supply all the hardware and software - though not all countries will be able to obtain specific local translations of programs - yet.

Indescomp,Po. Casetllana,179,1.-Madrid-16,SPAIN,(279) 31 05
Reynolds Electronics Ltd.,Finnabair Industrial Park,Dundalk,Co.Louth,EIRE,342 31281
Supremia Co Ltd,122 Gloucester Avenue,London NW1 8HX,ENGLAND,01 722 2231 (TURKEY)
Microstar s.r.l.,20125 Milano,via Cagliero,17,ITALY,02 68 87 604
Dinamicro aps,26 Flintholm Alle,DK 2000,Copenhagen F,DENMARK,01 88 02 88
Informasjonssystemer as,Lilleakerveien 2D,Oslo 2,P.O. Box 74,1324 Lysaker,NORWAY,472 50 10 80
Toptronics Ltd.,Nuppelantie 35,20310 Turku 31,FINLAND,921-392 766
Compumak Ltd.,9 Asklipiou St.,106 79 Athens,GREECE,36 09 846
Logica Imports Exports,2 Limassol Ave.,Nicosia,PO Box 537,CYPRUS,021 42336
D. Tanti & Co. Ltd.,St John Square,Valletta,MALTA,25931
Holland Micro BV,Mathenesserlaan 332,3021 HZ Rotterdam,NETHERLANDS,010 77484
Schneider Rundfunkwerke,Silvastrasse 1,8939 Turkheim/Unterallgau,FEDEREAL REPUBLIC OF GERMANY,08245 51-0
AWA-Thorn Consumer Products pty.ltd.,348 Victoria Road,PO Box 11,Rydalmere,NSW 2116,AUSTRALIA,638 9022
EPIC,20 Ashmount Street.,(Salah el Din),Heliopolis,EGYPT,661767

There are more in the pipeline, so keep watching for details. Henceforth, all overseas agents and distributors will be listed in the directory section of CPC464 user.

Q *Down to business*
Business programs are a bit thin on the ground. What's coming along?
D A, Essex

A This frequently asked question highlights the software equivalent of the story of the infinite number of monkeys and the infinite number of typewriters.

Theoretically, eventually one of them will write the entire works of Shakespeare - but don't hold your breath.....

Games software contains relatively few user controls, and the programs themselves are relatively easily and obviously tested. Business and utility software requires use of virtually every key on the keyboard, plus the shifts and controls. An infinite number of monkeys and an infinite number of computers is required to test something like a word processor through every possible combination of control and display sequence.

The task of testing and design of the user interface is several orders of magnitude greater than an arcade game, and the consequences of imperfect QA potentially more troublesome. Add to this the temptation strewn in the path of the programmer by the wealth of features that lurk within the CPC464, so 'business' software takes time to develop.

We have AMSWORD out at last. Robin Thompson of Tasman has done sterling work producing the most fully featured home micro word processor yet seen, and this will certainly be welcomed by the many Members who want to use the CPC464 as WP system. It's a very good example of a program upgraded from an inferior machine that has grown many additional features in the metamorphosis.

John Campbell has shown us the first example of his excellent Masterfile database utility - and that may even be available by the time you read this. Watch out for a full review in the next issue.

In particular, business users should watch out the for CP/M software announcements and reviews.

QA continued...

Q Boo, hiss.....

I have noticed an annoying background hiss/whine which is generated continuously whilst the computer is running. The noise increases when a program is being executed and reaches a peak when a part of a program like the following is reached

```
250 a$=INKEY$
260 IF a$="" THEN 250
```

I would be grateful if you would inform me as to the nature of this noise, and whether it be a fault specific to my own machine, or a design fault.

A D W, Kirkaldy

A The noise is the sound of Arnold thinking to himself. It's generated by the same process that exists to allow the user to hear when the tape is reading or writing. It is at a very low level, which may be completely silenced by the volume control if required. It's not a fault: it's a feature to provide unobtrusive reassurance that 'things are happening.'

You will notice that the sound extension socket is completely free from all background noise - so if you want sound in your programs without any of the informative little burbles that tell you when the processor is working hard, use this socket in conjunction with an amplifier. The overall effect from the extension sound socket can be quite breathtaking when played through a stereo system.

Q Fill 'er up!

Could you please advise me if there is a routine to colour in drawings made from BASIC?

G W, Pembroke

A The next issue of CPC464 user should be carrying a feature on this very subject, and meantime, we've introduced the Screen Designer program (see elsewhere for the review) which is a must for computer artists.

Perhaps some other readers would like to contribute their own particular machine code 'fill' routines?

Q Dumping displays

How can the DMP1 do a screen dump when my FX80 won't?

P H, Bradford

A The DMP1 uses an escape sequence to enable dot graphics printing, whereas other printers may use an optional 8th bit which is not supported on the CPC464 Centronics port. The question of availability of an interface for such printers is frequently asked, and it seems likely that at least one may be offered by 'add-onners', by the end of the year.

Q Disc swaps

Will it be possible to copy tape software to the AMSTRAD disc system?

A Yes, all your own programs and data will be interchangeable. Protected programs are more of a problem, and we will be announcing details of a nominal cost exchange scheme at the time the disc drives are being shipped. Some machine code programs that occupy the top of memory require reassembling about 1200 bytes lower to leave headroom for AMSDOS. More information on the technical aspects of the disc in the next issue.

Bear in mind that when buying programs on disc, you will have the benefit of the unused space on the disc - so an exchange at around the price of a blank disc would seem to be a fair solution all round.

Q No option

I have a problem: the machine refuses to save and load successfully at the 2000 baud rate, although it works fine at 1000 baud. What should I try?

J W, Hants

A As the speed goes up, the tape quality become increasingly important. Try a high spec TDK tape and see if this cures your problem. Failing that, you will have to seek assistance from the store where the computer was purchased.

Bear in mind that an inferior or very old tape may very rapidly 'clog' the head and render it considerably less efficient, so always use only tape of known pedigree, and beware of some of the proprietory tape head cleaners; the fluid can dissolve the plastic casing!

QA continued...

Q ***Spaced Out***

When listing programs, I can find no way of preventing double spaced printing with my SHINWA CP-80. The printer has been checked, the DIP switches have been set correctly, so it seems that the CPC464 is sending two line feeds on carriage return.

Also, ASCII character 129 on the Shinwa printer is a £ sign: the CPC464 will not send this to the printer.

Any suggestions?

A This is a very common problem, and is simply resolved by cutting the connection to pin 14 on the Centronics plug. The CPC464 sends a single line feed/carriage return, but there are many printers out there whose interface requires pin 14 to be open circuit in order to suppress the automatic line feed.

The £ sign problem is rather more tricky. The Centronics standard interface on the CPC464 is a 7 bit interface. Characters above 127 decimal (ie those with the 8th bit set) are ignored.

Incidentally, as far as we can tell there is no standard for characters above decimal 127. Most computers and printers end up doing their own thing with the eigth bit.

Finally, BASIC's width command generates an automatic newline unless set to 255, whereupon it is suppressed. However, the newline generated by a PRINT statement not terminated by a semicolon or comma will still be produced at the printer.

Big floppies

Q *I have worked with CP/M before, but only with 5" and 8" drives. I have all my software stored mainly on 5" discs, and am looking for a standard 5" drive capable of being interfaced to the CPC464.*

Alas, my 5" floppies won't fit into a 3" drive. Can you help?

P S, London N5

A Aha! Have you tried a pair of scissors? Seriously though... the 3" standard mechanism is compatible with 5" disc controller systems - and whilst this theoretically means that a 5" disc may be used in addition to the 3" disc on the controller supplied, life is not quite that simple.

The 5" drive must have compatible step and access rates, and may only be used as the second drive (B:) on a system. We are approaching CP/M software vendors and installation specialists, and hope to publish a list of those participating in the CPC464 CP/M program in the next issue.

Q ***Modem***

Can you tell me if a communications modem will be released for use in conjunction with the CPC464?

A T, Liverpool

A Yes. Several vendors, including Protek Computing of Edinburgh, are planning to make a modem available for the CPC464. Protek will be supporting the product with an interface and driving software, and are suggesting November as being the time for delivery. Protek are on (0506) 415353.

Amsoft is also working on some sophisticated viewdata software for CP/M, and this will be announced later in the year. Watch out for details.

Q ***Stuck in Stradus***

Please help. I've got Gems of Stradus, and am stuck. I have the blazer, matches, keys, stilts, paper, bottle, sharp sword but I cannot get past the pit (no plank) or the dark room. There are also one or two doors near the pool room I can't open. I know my map is accurate. Is there a bug?

Secondly, may I suggest that the silly aluminium motif between the piano keys and the Datacorder is covered by some useful information - ink colours for example. Why not produce suitable stickers so we members can place this on the available space?

R J S, Sheffield

A As far as we know, there are no bugs. And much as it may surprise you all, we don't have time to sit around all day playing games! This letter may be the start of our very own 'Get out of that' column. Is there anyone out there who can help this lost soul?

And as for the 'silly motif - well, we'll publish the best suggestions. Send along a drawing (as near final as possible) and the reward for the top 3 will be the honour of appearing in print, coupled with the arcade game of their choice.

Dear CPC464 user.........

Continued from page 30

convenience they offer, and hey presto, you've made a profit without any of the other benefits.

The User Manual is a beginners' guide and working spec. There are now lots of good books coming out, and one published hinted that he was grateful the instruction book left him so much scope. Was this a backhanded compliment or not?

Sir!

Thank you very much for your letter of August 9th. The enclosed copy of the Firmware Manual has answered many questions for me and I am sure that further study will be well rewarded!

On your recommendation I bought Codename Mat from 'Boots' and I certainly agree, it must be the last word in Space Epics. What put me off buying it before, was the instruction leaflet. By looking through that, it gave the impression that here was yet another Startrek clone, played out on grids. Only seeing it run reveals its full potential.

Once again the question of 'protected' programs. Back in the early days of the TRS 80, there was a great reluctance to buying expensive software until 'copy' programs arrived. Once they appeared and 'back-ups' were possible, lots more software was sold. This is not my opinion but that of several software dealers, who were around at that time and strange to relate, some of them are still around today! Obviously people will swap and give away copies, but I do not believe that they are in the majority. Today with double deck tape recorders it is easy to copy any thing. My point was that anyone with disk drives is not going to want to wait 9 or 10 minutes for a program to load. Is it not possible to provide a disk utility to load protected software, but not be able to punch out copies?

Enclosed please find a few more items that may be of interest. Thanking you once again for your assistance.

LJ.Astron

Software protection and copying to disc is discussed elsewhere - and we rather hope that the mature attitudes of all you sensible CPC464 users will prevail. Either that, or good software will simply become extinct.

Thanks very much for the program hints - we should add that these are twice re-typed listings, so we don't claim the near-infallibity of our direct setting techniques.

```
1 REM This program will find the DAY
for any DATE after 1753. Very useful
for Calendar printing etc.
The actual subroutine begins at line 3000.
2 REM Written by Les Aston Aug 1st 1984
10 CLS
100 WINDOW 10,30,8,16
110 CLS: INPUT"Month (1-12)";m
120 INPUT"Day (1-31)";d
130 INPUT"Year ";y
135 PRINT
140 IF y<1753 THEN PRINT"Invalid Date"
150 GOSUB 3000
160 PRINT:GOTO 110
3000 d$=SUNMONTUEWEDTHUFRISAT":M$=
     JANFEBMARAPRMAYJUNJULAUGSEPOCTNOVDEC"
     :M$=MID$9M$,(M-1)*3+1,3):IF M<>5 THEN M$=M$+"."
3010 M$=M$+STR$(D)+","+STR$(Y):M=M-2:IF M<1 THEN M=M+12:Y=Y-1
3020 Y%=Y-INT(Y/100)*100:M%=
     INT(2.6*M-0.19)+D+Y%+INT(Y/400)+
     INT(Y%/4)-INT(Y/4000)-2*INT(Y/100)
3030 M%=M%-INT(M%/7)*7:D$=MID$(D$,M%*3+1,3)+","+m$
3040 PRINT d$:FOR t=1 TO 4000:NEXT:RETURN
```

```
1 REM Probably the World's shortest
  word processor! Having entered the number
  of char. per line, type away and the
  text will be printed out each time ENTER is pressed twice.
2 REM the printer MUST be ready.
  This program is handy for speed
  and could be expanded in all directions!
50 CLS: INPUT"How many characters per line";c
60 CLS:q=0
80 a$=INKEY$:IF a$="" THEN 80
81 q=q+1: IF q*2>c THEN PRINT CHR$(13):q=1
100 PRINT#8,b$;:PRINT a$;
110 b$=INKEY$:IF b$="" THEN 110
130 PRINT#8,a$;:PRINT b$;:GOTO 80
```

Sir!

I am a Principal Lecturer in Computing at Manchester Polytechnic, and being in the profession I have resisted buying a home computer for some time. I now, however, at last succumbed to the pressure from my family and the attractions of the Amstrad CPC464. Not least of these attractions being the price which included a colour monitor.

I was pleased to receive a list of errata for the "Instruction Manual". There are, however, errors in the Pontoon program in chapter 4 pages 16 & 17.

1. Line 140 should read:
FOR X=1 TO 52

2. Line 610 should read:
IF F=11 THEN
CACES=CACES+1

3. There are some situations when the "house" has 21, but the program prints "you win". This can be corrected by:

Line 620 becomes: IF T<=21 THEN 560

4. If the "house" is dealt 2 aces (T=22) then line 560 takes control to line 700, at which point T is greater than S and the program prints "HOUSE WINS". This can be avoided by inserting line 705: IF T>21 THEN 630

Thank you for the issue one of CPC464 USER, on receipt of which my little boy (age 12) immediately typed in Alexander Martin's game 'BUSTOUT'. The whole family have had a great deal of pleasure from this game, and it certainly illustrates the power of Amstrad BASIC. One important feature of writing a game like this in BASIC is the ease with which it can be modified. Perhaps your readers would be interested in some of modifications:

1. At the end of the game the screen immediately resets for the start of the next game - before you have had time to read your score. I have changed this so that the screen remains in its final state until the player presses the space bar - it now needs 2 presses of the space bar to restart. These modifications are:

a) Insert line 405: IF INKEY$<>" " THEN 405

b) Delete GOSUB 420 from line 410 and insert it after lives=lives-1 in line 330. As score and lives are reset at line 100 there is no need to do this at line 410, so that line 410 becomes: 410 GOTO 60 and line 330 becomes:

```
330 lives=lives-1:
GOSUB 420:
SOUND 132,19,46,12,2,2:
IF lives=0 THEN 400
```

2. At the moment if all the 'wall' is destroyed the 'ball' continues to bounce around an empty screen. The following modifications will re-construct the 'wall' and let you continue to play.

Changed lines:

```
60 MODE 1:score=0:lives=5:GOSUB 70:GOTO 90
70 smax=1440+score:MOVE 30,16:DRAWR 0,400,1:MOVE 610,16:DRAWR 0,400,1
80 PEN 3:LOCATE 3,1:PRINT STRING$(36,143):PEN 2:LOCATE 3,2:
   PRINT STRING$(36,143):PEN 1:FOR r=5 TO 6:LOCATE 3,r:PRINT STRING$(36,143):
   NEXT r:RETURN
260 t=TEST(16*x1-1,-16*y1-1):IF t=0 THEN 290
270 ya=-ya:x1:yz=y1:y1=y1+ya:GOSUB 390:score=score+5+5*(t*t-t)/2
280 t=TEST(16*x1-1,-16*y1-1):IF t<>0 THEN smax=smax-5-5*(t*t-t)/2
```

Delete line 100
Insert

```
295 IF score=smax
THEN IF y1=8 THEN
GOSUB 70
```

I thought about giving the player 5 more lives if all the wall was destroyed (or at least resetting lives to 5), but decided that games must end sooner or later. However, if anybody is interested this can be done by:

```
295 IF score=smax THEN
IF y1=8 THEN
lives=lives+5:GOSUB 70
```

or

```
295 IF score=smax
THEN IF y1=8 THEN
lives=5:GOSUB 70
```

3. We eventually became a little bored by the fact that, at the start of the game, the 'ball' always started at the same position and only varied its direction. The following modification will place the 'bat' in a random position at the start of the game, and hence change the starting position of the "ball".

```
90 bx=1+2*INT(17*RND)
```

George Blundell

Thanks: Letters like that make all the effort of producing this rag really worth while.
Two games to Mr Blundell when he claims his prize!

BOMBER

'Bomber' is another classic example from the microcomputer Hall of Fame - and there can scarcely be a reader out there who has not played it in one of its guises. The idea is simply to bomb away at the randomly generated town below as you fly past, where your height decreases by one character cell with each successive pass.

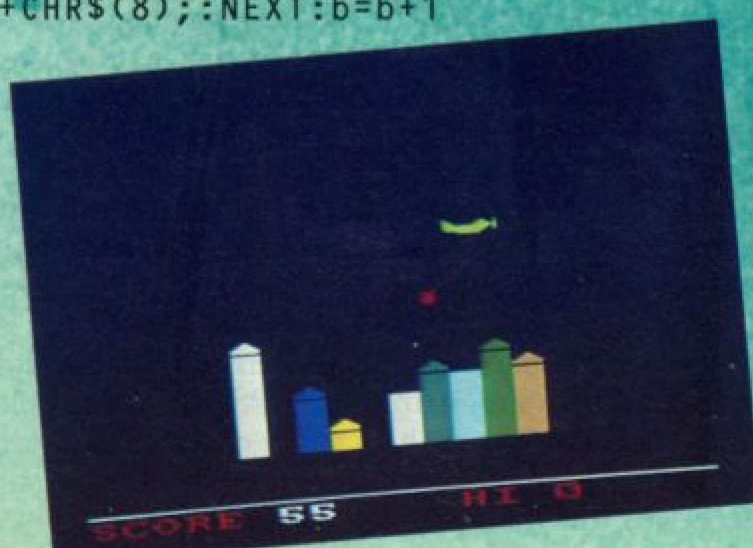
The complexity of the game is altered by adjusting the average height of the buildings and the speed of the aircraft. Taller buildings mean less time to complete your mission before colliding with the rooftops.

It's another great example of the compact nature of CPC464 Basic, free from the curse of multiple pokes and those other obscure elements that detract from the readability of the code.

```
1 REM ********************** BOMBER by DAVE TOWN ************************
10 REM ********************* Initialise ***********************
20 MODE 1:CLS:INK 0,0:BORDER 0:INK 1,18:INK 2,6:INK
    3,4:INK 5,15:INK 6,2:INK 7,24:INK 8,8:INK 9,26:INK 10,10:
    INK 11,20:INK 12,12:INK 13,16:INK 14,14:INK 15,21
30 SYMBOL AFTER 240:SYMBOL 241,&40,&60,&70,&7F,&7F,&3F,&7,&0
    :SYMBOL 242,&0,&32,&7A,&FE,&FA,&F2,&E0,&0
40 score=0:hiscore=0:plane$=CHR$(241)+CHR$(242):x=2:y=2:drop=0:a=2:b=2
50 GOSUB 380
60 CLS
70 PEN 2:LOCATE 1,15:INPUT"Skill : 0 (ACE) to 5 (NOVICE) : ",skill
80 IF skill<0 OR skill>5 GOTO 70
90 skill=skill+10
100 LOCATE 1,15:PRINT CHR$(18);:LOCATE 1,15:INPUT"Speed 0 (FAST)
     to 100 (SLOW) : ",rate
110 IF rate>100 OR rate<0 GOTO 100
120 REM************** Buildings *****************
130 MODE 0:FOR base=5 TO 15:FOR height=21 TO INT(RND(1)*8+skill)
     STEP -1:LOCATE base,height:PEN base-2:PRINT CHR$(143)+CHR$(8)+
     CHR$(11)+CHR$(244);:NEXT :NEXT
140 PLOT 0,20,4:DRAW 640,20,4
150 LOCATE 1,25:PEN 2:PRINT"SCORE";score;:LOCATE 13,25:PRINT"HI";hiscore;
160 REM************ Main Game *******************
170 LOCATE x-1,y:PRINT"   ";
180 PEN 1:LOCATE x,y:PRINT plane$;:PEN 2
190 IF y=21 AND x=15 THEN GOTO 210:ELSE GOTO 260
200 REM ********************* Landed *************************
210 FOR c=0 TO 1000:NEXT
220 score=score+100-(skill*2):skill=skill-1:x=2:y=2:a=2:b=2:drop=0
230 IF skill<10 THEN skill=10:rate=rate-20
240 IF rate<0 THEN rate=0
250 GOTO 120
260 FOR c=0 TO rate:NEXT
270 x=x+1
280 IF x=18 THEN LOCATE x-1,y:PRINT CHR$(18);:x=2:y=y+1:LOCATE x,y:
     PEN 1:PRINT plane$;:PEN 2
290 a$=INKEY$:IF a$=" " AND drop=0 THEN drop=1:b=y+2:a=x
```

BOMBER cont...

```
300 IF y=21 THEN drop=Ø
310 IF drop=1 THEN LOCATE a,b:PRINT CHR$(252);:LOCATE a,b-1:PRINT" ";:
    b=b+1:IF b>21 THEN LOCATE a,b:PRINT" ";:LOCATE a,b-1:PRINT" ";:
    a=Ø:b=Ø:drop=Ø:SOUND 3,4ØØØ,1Ø,12,Ø,Ø,1Ø
320 ga=(a-Ø.5)*32:gb=4ØØ-(b*16):bomb=TEST(ga,gb)
330 IF bomb>Ø THEN GOTO 53Ø34Ø gx=((x+1.5)*32):gy=4Ø8-(y*16):
    crash=TEST(gx,gy)
350 IF crash>Ø GOTO 45Ø
360 GOTO 17Ø
370 REM ******************** Instructions ********************
380 LOCATE 1,2:PEN 1:PRINT"You are piloting an aircraft over a
    des-erted city and must clear the buildings in order to land
    and refuel.  Your air- craft moves across  the screen from
    left to right.";:PRINT
390 PRINT:PRINT"On reaching the right, the aircraft returns to the
    left A LINE FURTHER DOWN.You have an unlimited supply of bombs
    and you can drop them on the buildings  below by pressing the
    SPACE BAR.";:PRINT
400 PRINT:PRINT"Each time you land, the height of the
    buildings or the speed of your aircraft increases.";:PRINT:PRINT:
    PRINT"ONCE YOU HAVE RELEASED A BOMB, YOU WILL NOT BE ABLE TO
    RELEASE ANOTHER UNTIL THEFIRST HAS EXPLODED !!!!";
410 PEN 2:LOCATE 1,24:PRINT:PRINT"Press any key to start.";
420 a$=INKEY$:IF a$="" GOTO 42Ø
430 RETURN
440 REM ******************** Collision ************************
450 LOCATE x-1,y:PRINT CHR$(32)+CHR$(32)+CHR$(32)+CHR$(238)
    +CHR$(8)+CHR$(188)+CHR$(8);
460 FOR t=1 TO 1Ø:SOUND 7,4ØØØ,5,15,Ø,Ø,5:PEN t:PRINT CHR$(238)+
    CHR$(8)+CHR$(188)+CHR$(8)+CHR$(32)+CHR$(8);:FOR tm=Ø TO
    5Ø:NEXT:NEXT:PEN 2
470 CLS:LOCATE 1,5:PRINT"You scored";score;
480 IF score>hiscore THEN hiscore=score:LOCATE 1,8:PRINT"TOP SCORE!!";
490 score=Ø:LOCATE 1,12:PRINT"Press R  to restart";
500 a$=INKEY$:IF a$="r" OR a$="R"  GOTO 51Ø:ELSE GOTO 5ØØ
510 PEN 1:MODE 1:x=2:y=2:a=2:b=2:GOTO 7Ø
520 REM ***************** Bombed Building ******************
530 LOCATE a,b-1:PRINT" "+CHR$(8);:PEN 4:FOR tr=1 TO INT(RND(1)*3)+
    1:score=score+5:SOUND 3,4ØØØ,1Ø,12,Ø,Ø,1Ø:LOCATE a,b:FOR t=Ø TO
    4:PRINT CHR$(238)+CHR$(8)+CHR$(32)+CHR$(8);:NEXT:b=b+1
540 IF b=24 THEN b=b-1
550 NEXT
560 LOCATE 6,25:PRINT score;:drop=Ø:
    a=x:b=y:GOTO 17Ø
```



D.I.Y. Typewriter

This program sets up the CPC464 as a simple to use editing typewriter system (a poor person's word processing system). It was developed in house by our very own Ivor Spital, and provides facilities to store and retrieve text to cassette or disc, cut and insert lines, re-type lines of text, and display on screen in the 'what you see is what you get' format.

It's user-friendly with menu prompts at the top of the screen. There's a panic feature that gets you out to the main menu without loss of data - simply press **[ESC]** twice, then the small **[ENTER]** key on the numeric keypad to return to the menu.

The program does not feature a full screen editor, but uses the same facilities as the BASIC line editor. Each line is numbered, and menu functions manipulate text by use of this index number.

Notes:

1. Don't use double quote marks " when the document is to be stored onto tape or disc. The computer interprets these as delimiters, and will terminate the line at the first set of quote marks.

2. When storing the file to disc, make sure that the filename chosen conforms to the AMSDOS & CP/M standard of up to eight permitted characters, plus a three character subscript: eg `ABCDEFGH.DOC`

3. To clear a document that that has been printed or filed, press **[ESC]** twice and re-`RUN` the program. Press the smaller **[ENTER]** key if you want to return without wiping off the document memory.

4. During text input, typing `E` on its own at the beginning of a line, then pressing **[ENTER]**, will return you to the menu..

The program operates with all Centronics interface printers. If you are using an EPSON compatible printer with features such as paper out sensing, auto form feeds, you may wish to override these functions by inserting lines 322-326.

```
322 PRINT#4,"PRINTER IS NOT ON LINE":SOUND
     1,200:PRINT#8,CHR$(13);:SOUND 129,0
324 PRINT#8,CHR$(27);CHR$(56);:REM
     DISABLE PAPER OUT ON EPSON
326 PRINT#8,CHR$(27);CHR$(79);:REM
     DISABLE FORM FEED ON EPSON
```

If you are using a green monitor, then....

```
60 MODE 2:BORDER 0:INK 0,0:INK 1,26:
    PAPER 0:PEN 1:GOSUB 1370
```

....will produce the best display combination.

Commentary

40-50	Force all user accessible variables to integer. Redefine keys. Set error trap to cope with invalid user input.
60	Set colours, mode and windows.
70	Allocate a file buffer for cassette (or disc) in the memory.
80-120	Option to load an external file.
130	Error trap point.
140-180	Read in external file
190-210	Set up conditions for text input.
220-280	Type in text.
300-460	Print out text.
480-600	Display text on screen.
620-690	Retype previous line of text
710-780	Add to existing text.
800-870	Store text onto cassette or disc.
890-1080	Insert text lines.
1100-1150	Cut text lines.
1170-1320	Menu.
1390-1470	Subroutine to display a line of text.
1490-1610	Subroutine to input a line of text and indicate remaining lines.
1630-1690	Accept user input for starting and finishing points.

D.I.Y. TYPEWRITER continued...

```
10 ' D.I.Y. TYPEWRITER by IVOR SPITAL
20 ' **** (c) AMSTRAD PLC. 1984 ****
30 '
40 DEFINT F,I,P,S,X:KEY DEF 18,1:KEY 139,"CLG:GOTO 1170"+CHR$(13)
50 ON ERROR GOTO 130:KEY 140,"          ":KEY DEF 68,1,140
60 MODE 2:BORDER 26:INK 0,26:INK 1,13:PAPER 0:PEN 1:GOSUB 1340
70 OPENOUT "FILEBUF":MEMORY HIMEM-1:CLOSEOUT
80 SOUND 1,20:PRINT #4,"DO YOU WANT TO LOAD AN EXTERNAL FILE (Y/N)?"
90 F$=INKEY$:IF F$="" THEN 90
100 IF UPPER$(F$)="Y" THEN 140
110 IF UPPER$(F$)="N" THEN 190
120 GOTO 90
130 SOUND 1,200:PRINT #4,"INVALID ENTRY!":FOR T=1 TO 2000:NEXT:RESUME
140 SOUND 1,20:INPUT #4,"ENTER NAME OF FILE ";G$
150 SOUND 1,20:PRINT #4,"INSERT DISC OR CASSETTE FILE THEN PRESS ANY KEY"
160 IF INKEY$="" THEN 160
170 WINDOW SWAP 0,4:OPENIN G$:INPUT #9,L,PW:MXL=INT(70000/PW):DIM TEXT$(MXL)
180 FOR X=1 TO L:INPUT #9,TEXT$(X):NEXT:CLOSEIN:WINDOW SWAP 0,4:GOTO 1170
190 SOUND 1,20:INPUT #4,"ENTER PRINTER WIDTH (10-70)";PW
200 IF PW<10 OR PW>70 THEN 190
210 MXL=INT(70000/PW):DIM TEXT$(MXL):F=0:B=24:K=0:GOSUB 1340
220 GOSUB 270:FOR X=1 TO MXL:GOSUB 1490:IF F=1 THEN 1170
230 IF K=1 THEN 250
240 NEXT
250 SOUND 1,200:PRINT #4,"CANNOT CONTINUE - NUMBER OF LINES EXHAUSTED"
260 FOR T=1 TO 3000:NEXT:GOTO 1170
270 PRINT #4,"E=END TEXT"
280 PRINT #2,STRING$(23,60);:RETURN
290 '
300 'PRINT-OUT
310 '
320 IF L=0 THEN 1310
330 SOUND 1,20:PRINT #4,"PRINT-OUT FULL DOCUMENT (Y/N)?"
340 H=0:B$=INKEY$:IF B$="" THEN 340
350 IF UPPER$(B$)="Y" THEN START=1:FINISH=L:GOTO 390
360 IF UPPER$(B$)="N" THEN GOSUB 1630
370 IF H=1 THEN 390
380 GOTO 340
390 PRINT #4,"PRINTER IS NOT ON-LINE":SOUND 1,200:PRINT #8,CHR$(13);
400 SOUND 129,0:WIDTH PW:CLG:FOR X=START TO FINISH:PRINT #4,"LINE";X
410 PRINT #8,TEXT$(X):GOSUB 1390:NEXT
420 SOUND 1,20:PRINT #4,"REPEAT PRINT-OUT (Y/N)?"
430 C$=INKEY$:IF C$="" THEN 430
440 IF UPPER$(C$)="Y" THEN 390
450 IF UPPER$(C$)="N" THEN 1170
460 GOTO 430
470 '
480 ' DISPLAY
490 '
500 CLG:IF L=0 THEN 1310
510 SOUND 1,20:CLS#4:LOCATE #4,20,1:PRINT #4,1;SPC(3)"[ENTER]":LOCATE #4,1,1
520 INPUT #4,"DISPLAY FROM LINE ";START:IF START=0 THEN START=1
530 IF START>L OR START<0 THEN 510
540 PRINT #4,"HOLD DOWN SPACE BAR TO DISPLAY"SPC(35)"Q=QUIT DISPLAY";
550 SOUND 1,20:FOR X=START TO L
560 E$=INKEY$:IF E$="" THEN 560
570 IF E$=" " THEN 600
580 IF UPPER$(E$)="Q" THEN 1170
590 GOTO 560
600 GOSUB 1390:NEXT:GOTO 1170
610 '
620 ' RETYPE
630 '
640 IF L=0 THEN 1310
650 SOUND 1,20:INPUT #4,"ENTER LINE NUMBER TO RETYPE ";X
660 IF X<1 OR X>L THEN 650
670 PAPER #3,1:PEN #3,0:GOSUB 1390:LOCATE #3,1,24:LOCATE #0,1,24
```

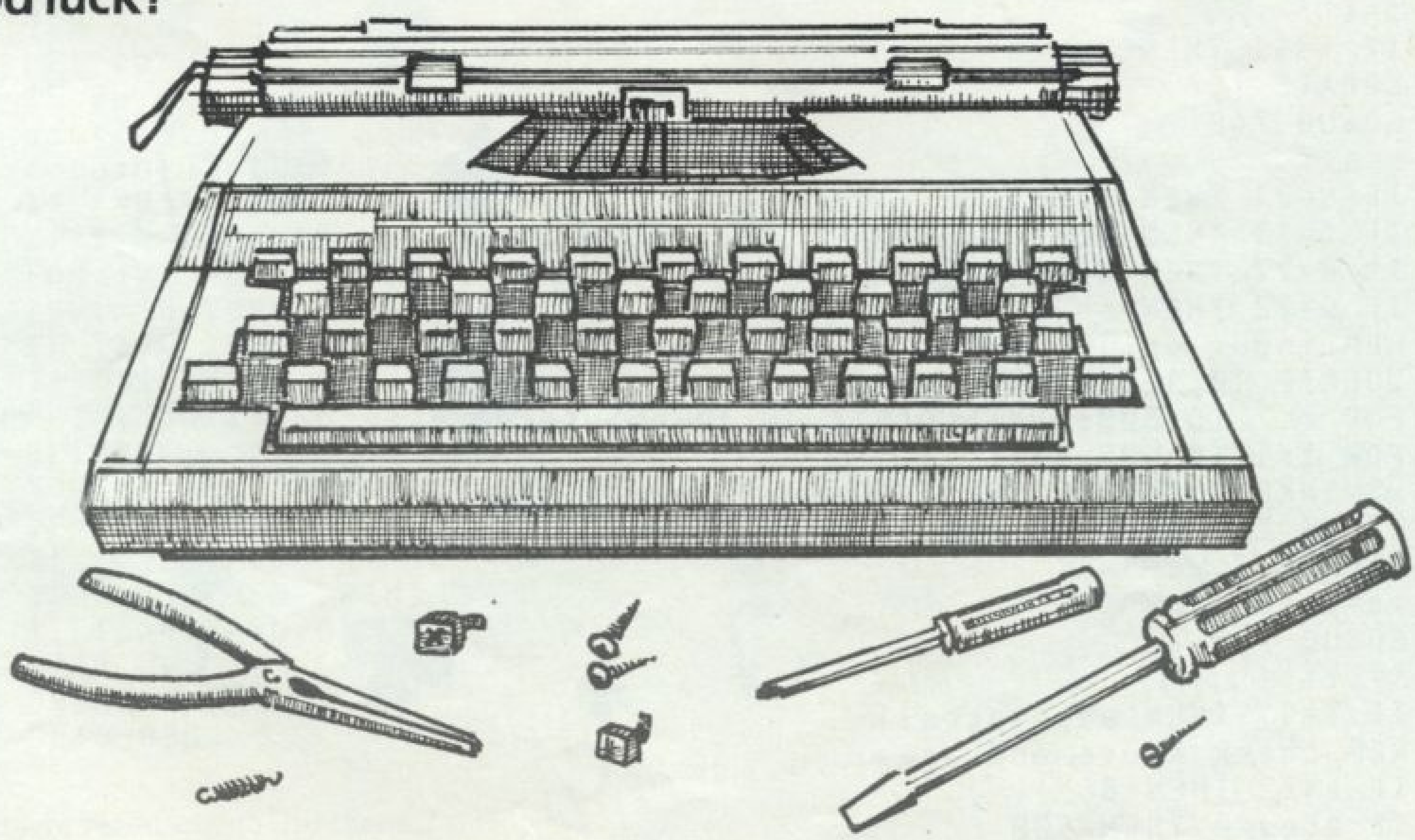
D.I.Y. TYPEWRITER continued...

```
680 PRINT #3,"RETYPE:>";:GOSUB 280:PAPER #3,Ø:PEN #3,1
690 LINE INPUT #Ø,"",TEXT$(X):CLG:GOSUB 139Ø:GOTO 117Ø
700 '
71Ø ' ADD
72Ø '
73Ø IF L=Ø THEN 131Ø
74Ø CLG:IF L>5 THEN S=(L-4) ELSE S=1
75Ø FOR X=S TO L:GOSUB 139Ø:NEXT:GOSUB 27Ø
76Ø F=Ø:B=24:FOR X=(L+1) TO MXL:GOSUB 149Ø:IF F=1 THEN 117Ø
77Ø IF K=1 THEN 25Ø
78Ø NEXT:GOTO 25Ø
79Ø '
8ØØ ' STORE
81Ø '
82Ø IF L=Ø THEN 131Ø
83Ø SOUND 1,2Ø:INPUT #4,"ENTER CHOSEN NAME FOR FILE ";G$
84Ø SOUND 1,2Ø:PRINT #4,"INSERT DISC OR CASSETTE FILE THEN PRESS ANY KEY"
85Ø IF INKEY$="" THEN 85Ø
86Ø WINDOW SWAP Ø,4:OPENOUT G$:WRITE #9,L,PW:FOR X=1 TO L
87Ø WRITE #9,TEXT$(X):NEXT:CLOSEOUT:WINDOW SWAP Ø,4:GOTO 117Ø
88Ø '
89Ø ' INSERT
9ØØ '
91Ø IF L=Ø THEN 131Ø
92Ø SOUND 1,2Ø:INPUT #4,"INSERT AFTER WHICH LINE NUMBER ";START
93Ø IF START<Ø OR START>L THEN 92Ø
94Ø SOUND 1,2Ø:INPUT #4,"INSERT HOW MANY LINES (5Ø MAX) ";I:IF I>5Ø THEN 94Ø
95Ø FOR X=L TO START+1 STEP -1:TEXT$(X+I)=TEXT$(X):NEXT:L=L+I
96Ø FOR X=START+1 TO START+I:TEXT$(X)="":NEXT:CLG
97Ø PRINT #4, "LINES INSERTED ="I:FOR T=1 TO 1ØØØ:NEXT:Y=L
98Ø SOUND 1,2Ø:PRINT #4,"DO YOU WANT TO TYPE INTO THE INSERT? (Y/N)"
99Ø I$=INKEY$:IF I$="" THEN 99Ø
1ØØØ IF UPPER$(I$)="Y" THEN 1Ø3Ø
1Ø1Ø IF UPPER$(I$)="N" THEN 117Ø
1Ø2Ø GOTO 99Ø
1Ø3Ø IF START>5 THEN V=(START-4) ELSE V=1
1Ø4Ø FOR X=V TO START:GOSUB 139Ø:NEXT:GOSUB 27Ø
1Ø5Ø F=Ø:B=24:FOR X=START+1 TO START+I:GOSUB 149Ø:L=Y
1Ø6Ø IF F=1 THEN TEXT$(X)="":GOTO 117Ø
1Ø7Ø IF K=1 THEN 25Ø
1Ø8Ø NEXT:SOUND 1,2Ø:PRINT #4,"INSERT FILLED":FOR T=1 TO 2ØØØ:NEXT:GOTO 117Ø
1Ø9Ø '
11ØØ ' CUT
111Ø '
112Ø IF L=Ø THEN 131Ø
113Ø GOSUB 165Ø:PRINT #4,SPC(45)"CUTTING IN PROGRESS - PLEASE WAIT"
114Ø FOR N=1 TO (FINISH-START)+1:FOR X=START TO L:TEXT$(X)=TEXT$(X+1):NEXT
115Ø L=L-1:LOCATE #4,1,1:PRINT #4,"RE-LOCATING LINE";X SPC(3):NEXT:CLG
116Ø '
117Ø ' MENU
118Ø '
119Ø GOSUB 134Ø:SOUND 1,2Ø:PRINT #4,"SELECT:>";
12ØØ PRINT #4,TAB(12)"D=DISPLAY   P=PRINT-OUT   R=RETYPE   ";
121Ø PRINT #4,"A=ADD   C=CUT   S=STORE   I=INSERT"
122Ø A$=INKEY$:IF A$="" THEN 122Ø
123Ø IF UPPER$(A$)="D" THEN 48Ø
124Ø IF UPPER$(A$)="P" THEN 3ØØ
125Ø IF UPPER$(A$)="R" THEN 62Ø
126Ø IF UPPER$(A$)="A" THEN 71Ø
127Ø IF UPPER$(A$)="C" THEN 11ØØ
128Ø IF UPPER$(A$)="S" THEN 8ØØ
129Ø IF UPPER$(A$)="I" THEN 89Ø
13ØØ GOTO 122Ø
131Ø SOUND 1,2ØØ:PRINT #4,"NOTHING ENTERED IN MEMORY"
132Ø FOR T=1 TO 2ØØØ:NEXT:GOTO 74Ø
133Ø '
```

D.I.Y. TYPEWRITER continued...

```
1340 ' DEFINE WINDOWS
1350 '
1360 WINDOW #0,9,(PW+8),3,25:WINDOW #2,(PW+9),(PW+9),3,25:WINDOW #3,1,8,3,25
1370 WINDOW #4,1,79,1,1:PAPER #4,1:PEN #4,0:CLS#4:RETURN
1380 '
1390 ' DISPLAY SUBROUTINE
1400 '
1410 LOCATE #0,1,24:LOCATE #3,1,24
1420 PRINT #3,X;:PRINT #3,TAB(8)">";:LT=LEN(TEXT$(X))
1430 IF INT(LT/PW)=LT/PW AND LT>0 THEN PRINT #0,TEXT$(X);
1440 IF INT(LT/PW)<>LT/PW OR LT=0 THEN PRINT #0,TEXT$(X)
1450 IF INT(LT/PW)<>LT/PW AND LT>PW THEN FOR N=1 TO INT(LT/PW):PRINT #3:NEXT
1460 IF INT(LT/PW)=LT/PW AND LT>PW THEN FOR N=1 TO (INT(LT/PW)-1):PRINT #3:NEXT
1470 RETURN
1480 '
1490 ' LINE INPUT SUBROUTINE
1500 '
1510 COUNT=INT((FRE(0)-1000)/PW)
1520 IF COUNT<1 THEN CLS#2:CLS#3:K=1:RETURN
1530 LOCATE #4,44,1:PRINT #4,"NUMBER OF LINES REMAINING ="COUNT;SPC(3)
1540 LOCATE #3,1,24:LOCATE #0,1,B
1550 PRINT #3,X;:PRINT #3,TAB(8)">";:LINE INPUT #0,"",TEXT$(X)
1560 L=X:IF UPPER$(TEXT$(X))="E" THEN L=X-1:F=1:RETURN
1570 LT=LEN(TEXT$(X)):B=24
1580 IF INT(LT/PW)=LT/PW AND LT>0 THEN B=23
1590 IF INT(LT/PW)=LT/PW AND LT>PW THEN FOR N=1 TO (INT(LT/PW)-1):PRINT #3:NEXT
1600 IF INT(LT/PW)<>LT/PW AND LT>PW THEN FOR N=1 TO INT(LT/PW):PRINT #3:NEXT
1610 RETURN
1620 '
1630 ' START/FINISH SUBROUTINE
1640 '
1650 SOUND 1,20:INPUT #4,"COMMENCING LINE NUMBER ";START
1660 IF START<1 OR START>L THEN 1650
1670 SOUND 1,20:INPUT #4,"FINAL LINE NUMBER ";FINISH
1680 IF FINISH<START OR FINISH>L THEN 1670
1690 H=1:RETURN
```

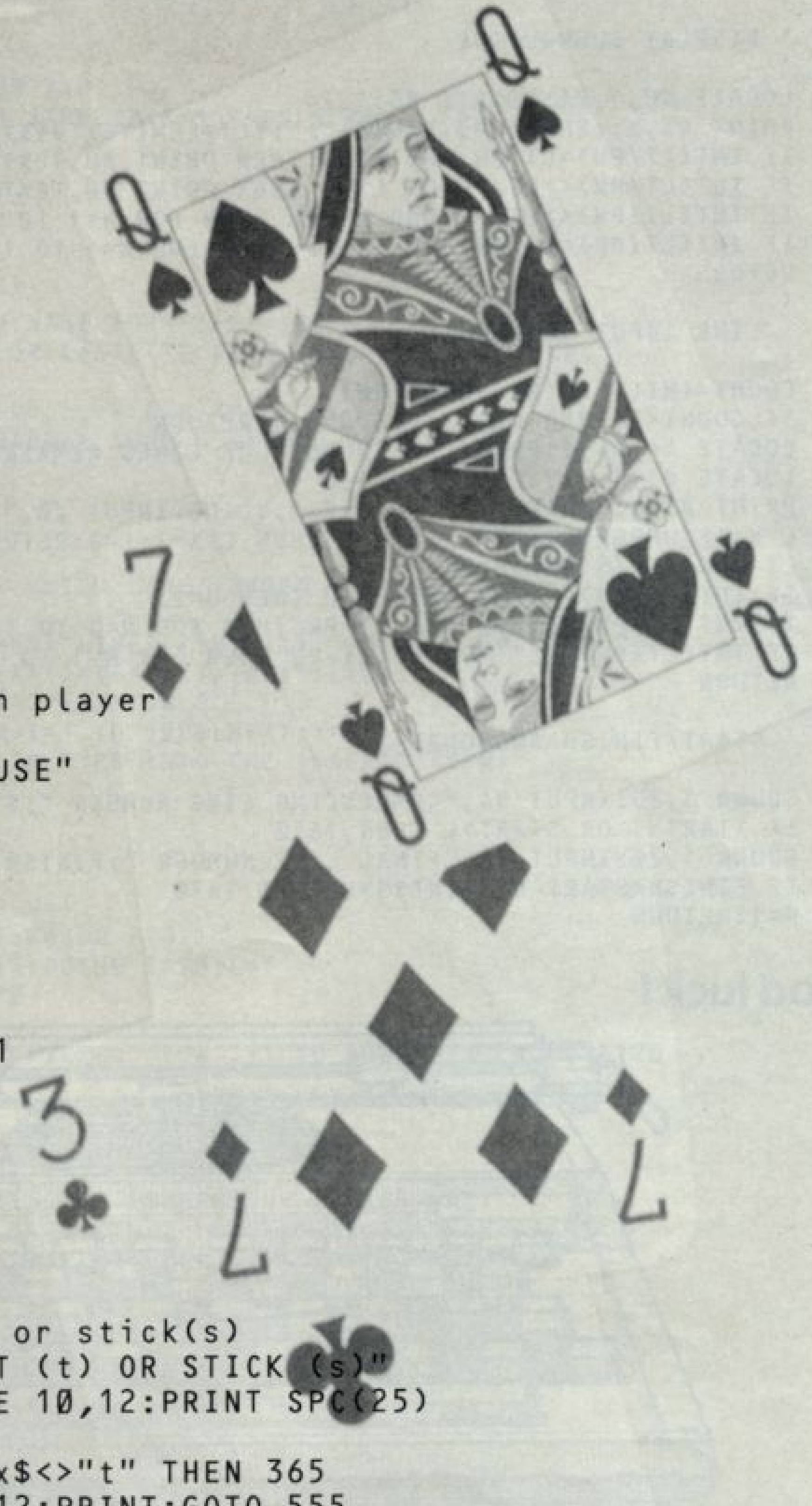
Good luck!



Pontoon revisited

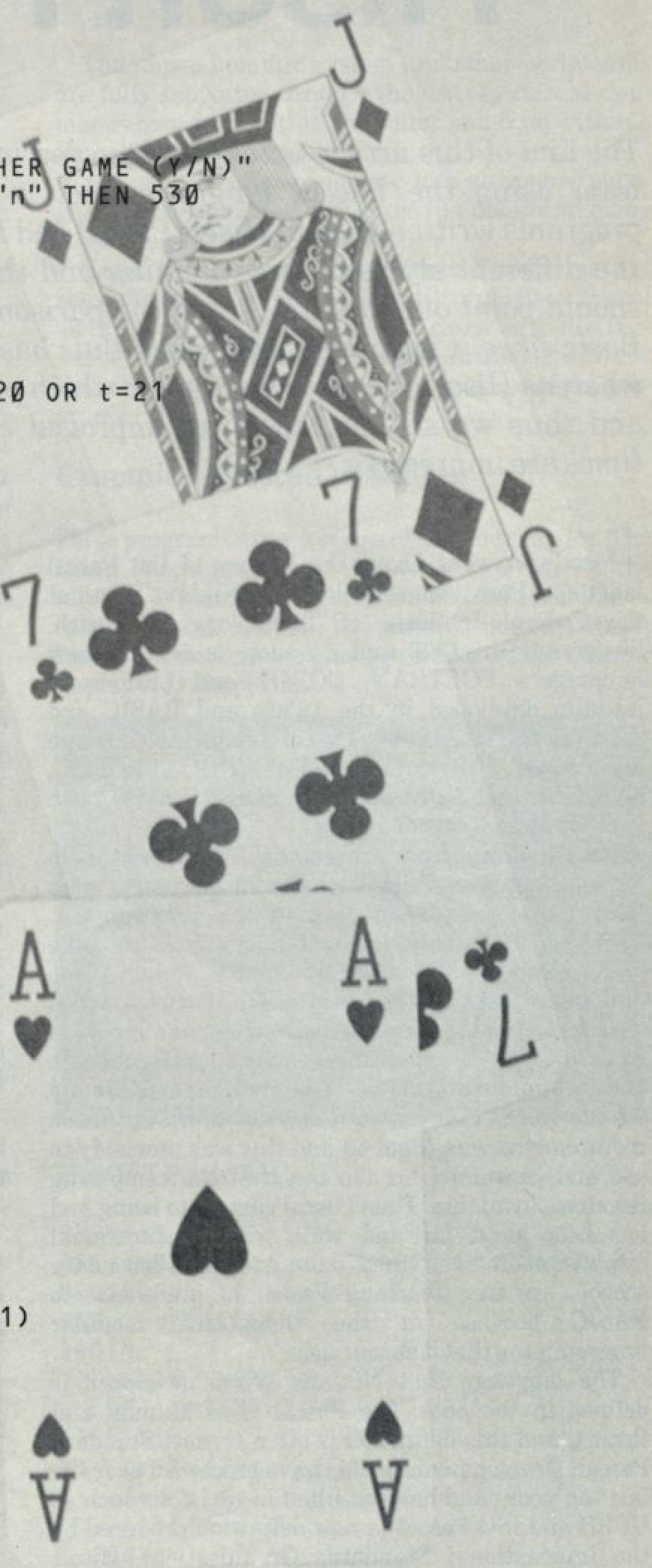
Stephen Greenwood, another ardent Amstrad admirer, discovered that the pontoon program in the User Guide failed to give him a fair deal. In fact, the outcome seemed positively devious at times.

```
1   REM pontoon
5 INK 0,21:INK 1,0
10  REM initialise
15 MODE 1
20  yc=2:cc=2
30 aces =0
40 caces=0
45 laces=0
50 s=0
60 t=0
70 DIM suit$(4)
80 suit$(1)=CHR$(226)
90 suit$(2)=CHR$(227)
100 suit$(3)=CHR$(228)
110 suit$(4)=CHR$(229)
120 CLS
130 DIM pack(52)
140 FOR x= 1 TO 52
150 pack(x)=0
160 NEXT x
170 REM deal two cards to each player
180 LOCATE 8,3
190 PRINT "PLAYER";SPC(15)"HOUSE"
200 LOCATE 7,5
210 GOSUB 740
220 s=s+f
230 IF f=11 THEN aces=aces+1
232 LOCATE 27,5
234 GOSUB 740
236 t=t+f
238 IF f=11 THEN caces=caces+1
240 LOCATE 7,6
250 GOSUB 740
260 s=s+f
265 IF s=21 THEN 670
270 IF f=11 THEN aces=aces+1
275 IF s=22 THEN aces=aces-1
280 IF s=22 THEN s=12
360 REM input option-twist(t) or stick(s)
365 LOCATE 10,12: PRINT "TWIST (t) OR STICK (s)"
   :FOR z=1 TO 500:NEXT:LOCATE 10,12:PRINT SPC(25)
   :FOR z=1 TO 500:NEXT
370 x$=INKEY$:IF x$<>"s" AND x$<>"t" THEN 365
380 IF x$="s" THEN LOCATE 10,12:PRINT:GOTO 555
390 LOCATE 7,yc+5
400 yc=yc+1
410 GOSUB 740
420 s=s+f
430 IF f=11 THEN aces=aces+1
440 REM check score and aces
450 IF s<22 THEN 365
460 IF aces=0 THEN 500
```



Pontoon revisited cont...

```
470 aces=aces-1
480 s=s-10
490 GOTO 450
500 LOCATE 12,19
510 PRINT "YOU'RE BUST"
520 PRINT:LOCATE 12,21:PRINT"ANOTHER GAME (Y/N)"
530 x$=INKEY$:IF x$<>"y" AND x$<>"n" THEN 530
540 IF x$="y" THEN RUN
550 END
555 LOCATE 27,6
556 GOSUB 740
557 t=t+f
558 IF f=11 THEN caces=caces+1
560 IF t=17 OR t=18 OR t=19 OR t=20 OR t=21
  THEN GOTO 700
570 cc=cc+1
580 LOCATE 27,cc+4
590 GOSUB 740
600 t=t+f
610 IF f=11 THEN caces=caces+1
615 IF t>6 AND t<12 AND laces>0
  THEN t=t+10:GOTO 700
620 IF t<21 THEN 560
625 IF t=21 THEN 700
630 IF caces=0 THEN 670
640 caces=caces-1:laces=laces+1
650 t=t-10
660 GOTO 620
670 LOCATE 12,19
680 PRINT "YOU WIN"
690 GOTO 520
700 LOCATE 12,19
710 IF t<s THEN 670
720 PRINT "THE HOUSE WINS"
730 GOTO 520
740 REM deal card
750 LET card=INT(RND(1)*52+1)
760 IF pack(card)=1 THEN GOTO 750
770 pack(card)=1
780 f=card-13*INT(card/13)
790 IF f=0 THEN f=13
800 IF f=1 OR f>10 THEN GOTO 845
805 FOR z=1 TO 1000:z=z+1:NEXT
810 IF f=10 THEN PRINT f;" ";
815 IF f<10 THEN PRINT " "f" ";
820 IF f>10 THEN f=10
830 PRINT suit$(INT((card-1)/13)+1)
840 RETURN
845 FOR z=1 TO 1000:z=z+1:NEXT
850 IF f=11 THEN PRINT "  J  ";
860 IF f=12 THEN PRINT "  Q  ";
870 IF f=13 THEN PRINT "  K  ";
880 IF f<>1 THEN GOTO 820
890 f=11
900 PRINT "  A  ";
910 GOTO 830
```



Any more variations on this theme?

HiSoft PASCAL

The aim of this article is to introduce you to some of the benefits that may be gained from using the Pascal language and, in particular, to show you some specific programs written both in Hisoft Pascal and Locomotive Basic so that you can compare the different styles of programming and the execution speeds of the programs. We should point out that any speed comparison may be somewhat unfair to Locomotive Basic since it is an interpreter and thus has to decode each line as well as execute it, whereas Hisoft Pascal is a compiler which produces directly executable machine code and thus we should expect an improved execution time; nevertheless, the Pascal times are impressive.

Firstly, a word about the history of the Pascal language. Pascal was developed by Niklaus Wirth at the Federal Institute of Technology in Zurich, Switzerland in 1970 and, as such, is a fairly new language - FORTRAN, COBOL and LISP were initially developed in the 1950's and BASIC and BCPL in the late 1960's. Pascal's stablemates in the last decade include C, FORTH, LOGO, PROLOG, MODULA and ADA, and only FORTH and C have gained any general popularity.

Pascal sprang from a need within universities to have a language which was rich in data structures (how we organise our data in the program e.g. `ARRAY`s, `SET`s etc.) and statement structure (like `FOR` loops, `IF..THEN..ELSE` etc.); the philosophy was that the use of such a language would encourage good programming practice, and result in modular, self-documenting, easily understandable and modifiable programs. The only language around at the time that came close to fulfilling these requirements was Algol 68 and this was unwieldy to use and consumed far too much of the computing resources available. Thus Pascal came into being and has been used far and wide within educational estabishments ever since; more and more secondary schools are now teaching Pascal in preference to BASIC because of the thoughtful, modular programming that it encourages.

The language that Niklaus Wirth developed is defined in the book The Pascal User Manual and Report, and this definition is often termed Standard Pascal. Developments of this have proceeded over the last ten years and have resulted in revisions such as UCSD and ISO Pascal (a new definition produced by the International Standards Organisation). Hisoft Pascal is very close indeed to the original definition of the language with added features that enhance its use on microcomputers and the CPC464 in particular.

So why learn and use Pascal rather than any of the myriad of alternative languages available today, or why not simply stick to BASIC? Well, I believe, and there are many that disagree, that the original reason for the development of Pascal i.e. as a teaching language to develop a clear, natural and structured programming style, still holds good today. Pascal allows you to transfer your abstract concepts directly into your program instead of forcing you to invent some arbitrary and meaningless compromise to suit the vagaries of the language.

In case this seems unnecessarily philosophical, let's look at a specific example: the classic address book program. Here you want to keep a record of your friends' names, addresses and telephone numbers - how do you do it? Well you must set up some sort of data struture in which to keep the information together. In BASIC you are forced to use an array structure because this is the only way of holding lists of data within BASIC. So you have to write something like:

```
DIM N$(50)     :REM the names
DIM A$(50,4)   :REM the addresses
DIM T$(50)     :REM the telephone
                 numbers
```

and the information relating to one person is spread out over three different lists; you could combine it into one 2-dimensional array but still you would not be keeping the information about one person together in one place in the way that you would manually in the form of a page in a book or a record card in a file. Cue Pascal, which has a `RECORD` structure built into the language:

HiSOFT PASCAL continued...

```
Friend=RECORD
        Name     :STRING;
        House    :STRING;
        Road     :STRING;
        Town     :STRING;
        Pcode    :STRING;
        Tel      :STRING
      END;

AddressBook:ARRAY[1..Max]OF Friend;
```

As you can see, it takes a little longer to set up the structure in Pascal but what you end up with is far more meaningful; each friend's details are kept together in a separate record and the address book is simply a collection of all the entries. This type of structure is far easier to use and tends to result in your programs working first time since the structure more closely reflects your way of thinking.

Ok, enough of why you should use Pascal; why should you use Hisoft Pascal on the CPC464?

Hisoft Pascal is not only close to Standard Pascal, it is also extremely fast and contains many CPC464-related features. For those who know Pascal, Hisoft Pascal supports:

Data structures:
CHAR, INTEGER, REAL, ARRAY, SET, RECORD, POINTER

Statements:
IF..THEN..ELSE, FOR..DO, WHILE..DO, REPEAT..UNTIL, CASE..OF, GOTO!

Procedures/Functions:
Fully recursive with local variables and value and/or variable parameters. FORWARD declarations. Full set of standard library functions/procedures plus:

Additional features:
PEEK, POKE, USER' ADDR, SIZE, INLINE, OUT, INP, TIN, TOUT (for saving data structures to tape e.g. your address book), SOUND, ONSQ, SQ, ENV, ENT, AFTER, EVERY, REMAIN, INITEVENT, EXTERNAL. Turtle Graphics package included in source form on the cassette.

An extensive editor is contained within the Pascal which allows easy creation, modification and backup of your programs.

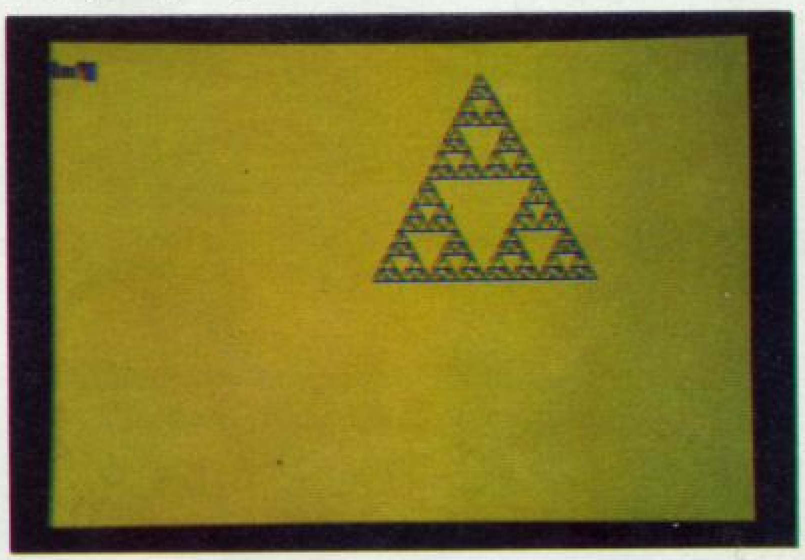
The impending disc system and other peripherals are fully supported through the use of external commands both from within the editor and from within a Pascal runtime program.

The package comes complete with an approximately 100 page manual which gives full details on using the package within the CPC464.

Right, finally let's look at a couple of programs that show the power, speed and versatility of Hisoft Pascal on the Amstrad CPC464. In both cases we give a listing of the programs in Locomotive BASIC and Hisoft Pascal and the respective execution times of the programs.

Example 1. Nested Triangles

These programs draw a series of nested triangles. The Hisoft Pascal program is simple for two reasons; the solution is recursive (it calls itself) and recursion is easy in Pascal, and also the program uses the Hisoft Pascal Turtle Graphic package which makes graphic display very simple indeed.

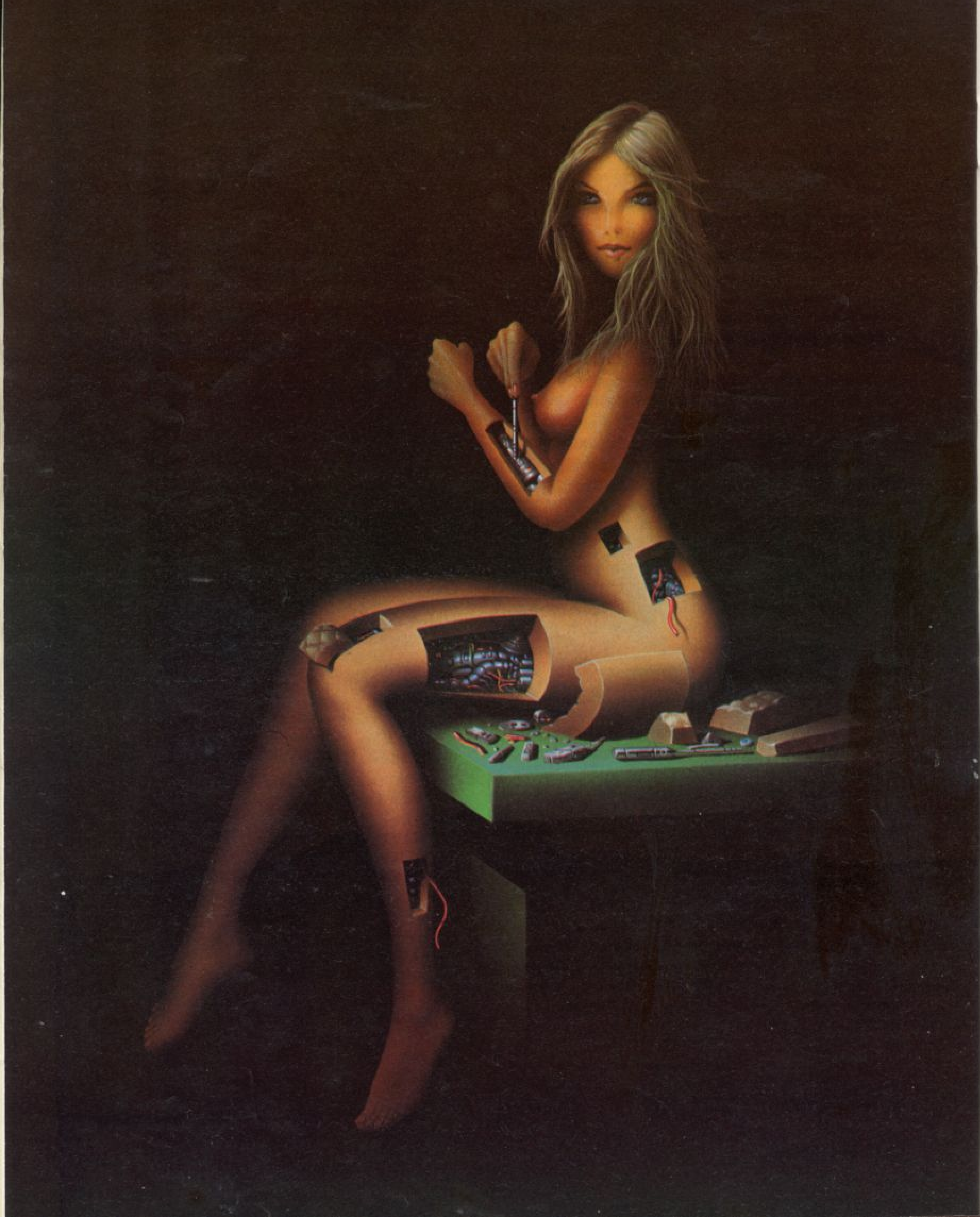


HISOFT PASCAL

```
PROGRAM Tri;
I$f TURTLE get    Turtle GraphicsU
PROCEDURE tri (s : real);
VAR i : INTEGER;
BEGIN
 IF s>10 THEN
  FOR i:=1 TO 3 DO
   BEGIN
    tri(s/2);
    fwd(s);
    left(120);
   END;
END;
```

Continued on page 54

INSIDE THE HARDWARE



Hardware

No, the illustration on the facing page is not a prototype of the revolutionary Amstrad product heralded in our Chairman's end of year statement to the shareholders. It's a rather colourful way of introducing a subject that has otherwise been known to send software buffs to sleep. You can expect to be awoken by some more of Tim White's masterly illustrations in subsequent issues -and if you would like posters of these gems-well, maybe we would consider that too.

Modulators versus direct connect video

Although most computer users take it for granted that direct connect video systems offer better quality than video that is modulated and displayed on a domestic TV set, have you ever stopped to wonder why?

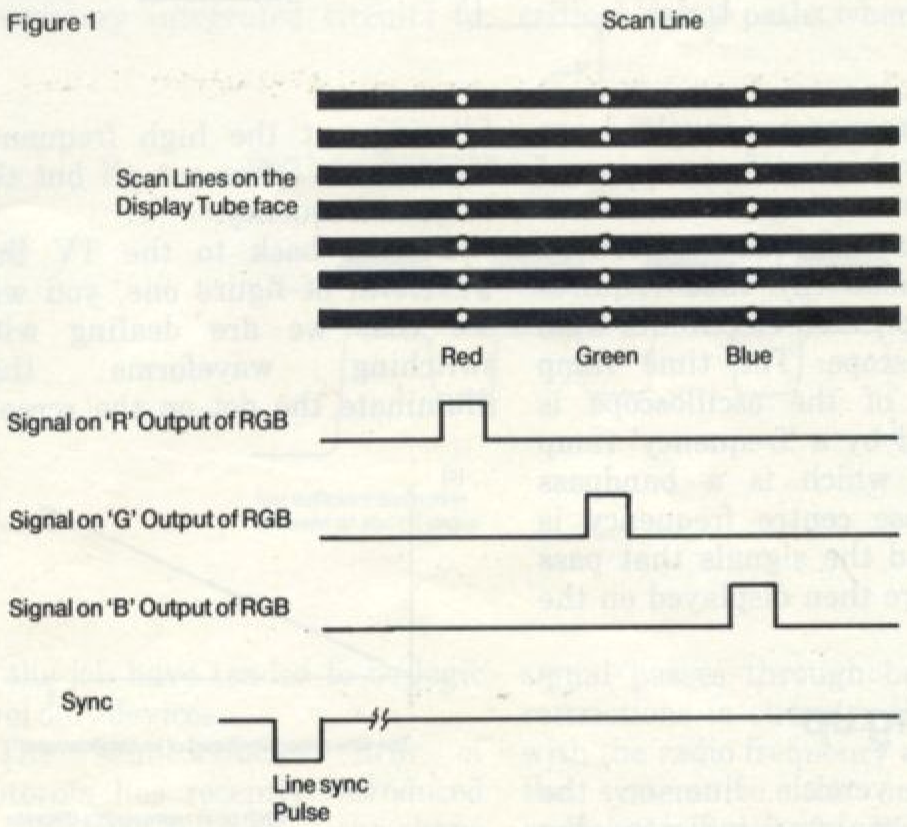
The answer is simpler than you might imagine, though the route to the explanation can lead down a number of slightly spurious but nevertheless interesting byways.

First the easy bit. The RGB (Red, Green and Blue) signals are fed to the individual red green and blue electron guns of the display tube without ever needing to know of each others' existance. All that is required in addition to the amplitude of the RGB is some means of synchronising events on the scan - so a fourth signal provides the line 'sync' pulse which synchronises the horizontal scanning by providing a reference point for the start of each scan to provide a steady picture. Figure one traces this action through to the screen.

You will note that the relative position of the sync pulse will determine the relative horizontal position of the display on the screen. Shifting the sync pulse in relation to the RGB signals will cause the picture to shift horizontally left (advancing the sync pulse) or right (delaying the pulse).

This question of timing is crucial to all aspects of colour TV -it's probably the main obsession of the TV transmission engineer. Phrases like 'group delay' abound in the jargon - since whenever a signal passes through a filter (a device that only allows a specific section of the signal to pass through) of some variety, it is important that the entire spectrum of the signal is affected by the same amount, or the high frequency part of the signal may be slowed up by a larger relative delay than the low frequency end, whereupon fuzzy pictures and shadowing ensue.

Figure 1

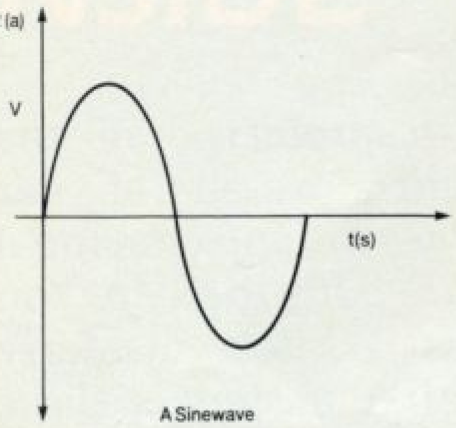


Spectrum?

That word again. In this context it relates to the range of frequencies occupied by an AC electrical signal. The mains supply in your house which alternates at the very lowly 50 Hertz (I prefer the older and immensely more demonstrative term 'cycles per second' (cps) instead of the bland Hz) - most of the internal workings of the CPC464 are based on the 4MHz clock, and virtually all the internal timing is derived by dividing down the master crystal frequency of 16MHz.

16MHz as opposed to 4MHz is used for a couple of reasons, it's a cheaper type of quartz cut - and the smaller quartz wafer is more resilient to mechanical shock. Many of you will recognise an oscilloscope trace of an alternating waveform (sinewave - figure two).

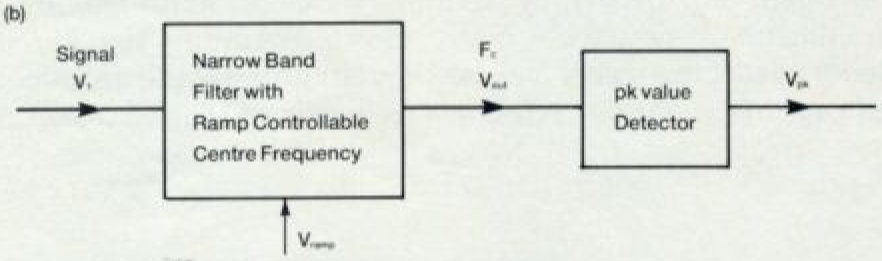
Figure 2 (a)



A Sinewave

How many recognise this when transposed from the 'time domain' (where the y-axis of the graph is elapsed time) to the frequency domain where the y-axis is a frequency range - or Spectrum (figure 2e)? A white light diffusion spectrum through an optical prism is exactly the same thing, except

Figure 2 (b)



that the frequencies involved are the rather higher frequencies of visible light.

To display a frequency spectrum on a cathode ray tube requires more complicated electronics than an oscilloscope. The time ramp generator of the oscilloscope is augmented by a 'frequency' ramp generator which is a bandpass filter whose centre frequency is varied, and the signals that pass through are then displayed on the screen.

Squaring up

A single verticle line on the spectrum analyser indicates the presence of a single frequency -which must be a pure sinewave since a single frequency spectrum is always a sinewave. The waveforms within a computer are based on switching states and are ideally square waves (figure three) which turn on and off. In practise there is a finite rise and fall on the square wave leading and trailing edge.

However, in terms of spectrum usage, the square wave is very greedy - since the square wave is built up of many high frequency sinewave components that combine together to produce the squarewave. A perfect squarewave (there's no such thing) would contain high frequency components that stretched to a infinitely high frequency. And if the maximum frequency available to build this squarewave is restricted in any way, then the result is somewhat less of a squarewave, (figure four).

Indeed, if the highest frequency that is allowed to pass, is equivalent to the period of the squarewave itself - then we're back to the sinewave. The process of filtering out the high frequency components takes out all but the original frequency.

Getting back to the TV line waveform of figure one, you will see that we are dealing with switching waveforms that illuminate the dot on the screen. The longer this switching waveform takes to rise and fall, the less distinct will be transition of the brightness between the on and off states.

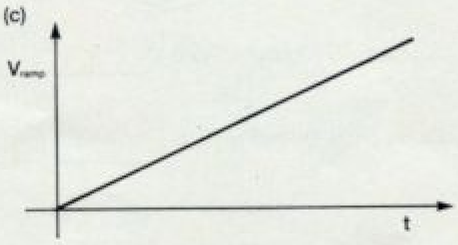
If the maximum frequency of the squarewave is restricted, then the BANDWIDTH is said to have been reduced. Ideally, 40MHz is required for the best high resolution displays - and the tube itself must respond at this rate as well as the waveform controlling the gun firing the electrons at the phosphor dots that make up the screen. Bandwidth costs money and power consumption, so a compromise is chosen that suits the specific application.

8-12MHz is required for crisp 80 column text - and this is achieved in the CPC464 direct RGB system. The limiting factor is more likely to the be size of the phosphor dots on the front of the display than the speed of the switching signals.

But.... when the signal passes through a TV modulator to be connected via the antenna of a TV set, the first thing that happens is that the bandwidth is restricted to 4MHz maximum. Those nice square switching waveforms suddenly look a little rounded and if we examine a scan line from an 80 column display, the adjacent pixel signals run together and blur. See figure five.

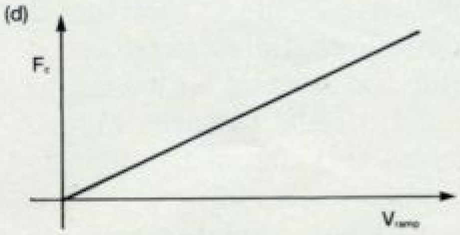
This limitation is quite unavoidable in a colour TV due to the nature of the PAL colour

(c)



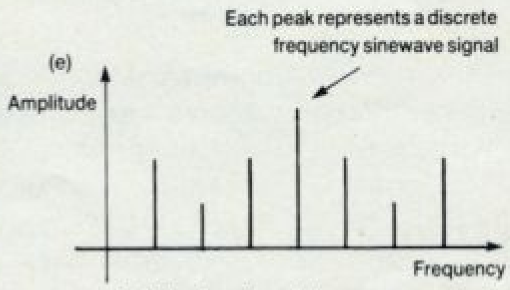
The time ramp (timebase) of an oscilloscope

(d)



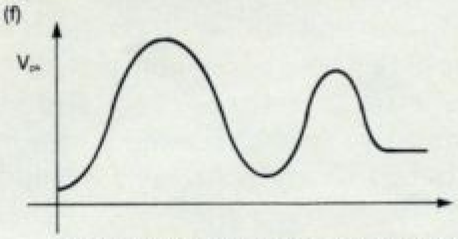
applying the Voltage ramp of 2(b) to the filter varies the centre frequency

(e)



for V_i having discrete frequency content (a frequency spectrum display)

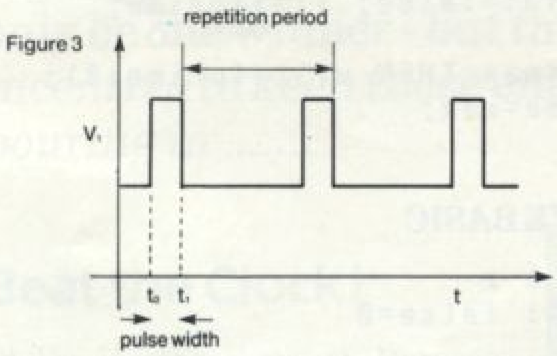
(f)



for V_i having continuous freqency content

encoding system which has to combine RGB and sync into a single composite waveform capable of being transmitted on a single frequency. The actual mechanism of this encoding process is well beyond the scope of this simple feature, so you'll have to take our word for it.

Another problem that arises is

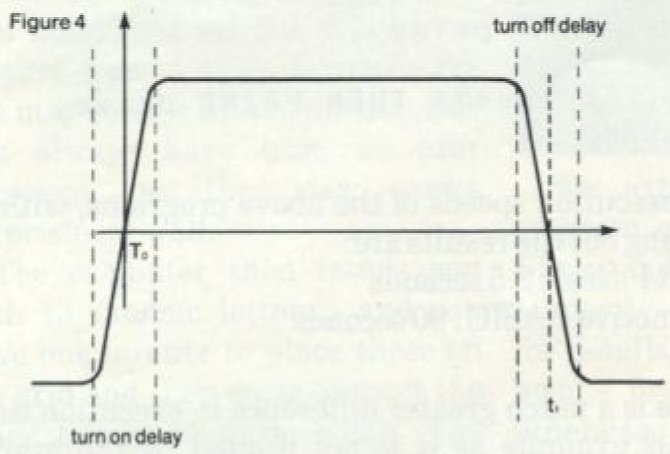


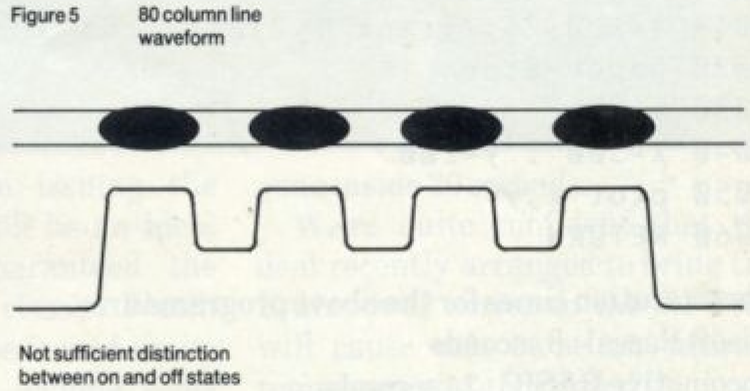
when the frequency (as represented by the reciprocal of the time period) of the displayed line waveform approaches the frequency of the colour sub-carrier signal at 4.43MHz. A simple way to observe this problem occurs now and again when watching broadcast TV - if someone happens to be wearing a chequered tie where the line waveform required to represent this on the screen is the right 'frequency', then rainbow colours will crawl over the pattern as the PAL colour system becomes thoroughly confused by this rogue signal that interferes with its reference. There is no known cure to this phenomenon, other than than to filter the incoming waveform so that frequencies around 4.4MHz are stopped from passing through - and this will inevitably limit the resolution available on the display.

Computers and modulators

The next consideration facing the computer designer is the question of the range of colours to display. With the three primary colours to play with, there are 8 possible 'binary' combinations. Most monitors are designed to accept only logic level inputs where there is no scope for a linear drive signal - ie one where the RGB signals lie somewhere between the two extremes of 'on' or 'off'.

To achieve more than 8 colours, the monitor must have a linear input range (such as the CTM640): and since all TV's are inherently linear, being capable of displaying a continuous range of shades from black to white, this is not the problem. The design of the colour modulator must also reflect this need for a linear approach - and proprietory integrated circuits to do the job have tended to be logic level only devices.





The semiconductor firm of Motorola has recently introduced an advanced solution in the shape of its MC1377, which manages to lump together all the elements of an RGB to composite modulator of either PAL or NTSC (the US standard) in a single function block. This means that a TV camera with an RGB output might be used equally as effectively as a signal source.

The 400nSec delay between pins 6 and 8 of this device is to equalise the delay introduced by the bandpass filter on the output of the chroma amplifier between pins 10 and 13 - or there would be a difference in timing between the luminance (brightness) signal and the chrominance (colour) signal that results in shadowing of vertical lines.

From the computer designer's point of view, this device is a godsend. Most logic engineers are not noted for their affinity with the linear side of life - especially where radio and TV are concerned.

Even technology such as this cannot get around the problems of the restricted bandwidth of modulated TV versus direct connect video - but as a convenient solution to otherwise thorny problems, it's a significant improvement in the cost/performance ratio. And in addition to the inherent limitations at the composite encoding stage, the TV route introduces several additional critical 'delay' paths where the TV signal passes through bandwidth restrictions in circuitry that deals with the radio frequency aspects of the system: ie. the actual RF modulator itself, the RF and IF stages of the receiver.

So the bottom line is that you cannot beat a direct connect video system if you want to achieve the best resolution on your display -which is one of the prime reasons why we chose to design the CPC464 system the way we did.

HiSOFT PASCAL continued...

```
BEGIN
 turtle;
 tri(200);
END.
```

LOCOMOTIVE BASIC

```
10 DIM s[20]
20 GOSUB 4000
30 sp=0:s=200
40 GOSUB 1000
50 END
1000 IF s<10 THEN RETURN
1010 sp=sp+1
1020 i[sp]=0
1030 WHILE i[sp] < 3
1040 s=s/2:GOSUB 1000:s=s*2
1050 l=s:GOSUB 3000
1060 heading=heading+120
1070 i[sp]=i[sp]+1
1080 WEND
1090 sp=sp-1
1100 RETURN
3000 x=x+l*COS(heading*PI/180)
3010 y=y+l*SIN(heading*PI/180)
3020 DRAW x,y
3030 RETURN
4000 heading=0
4010 ink 0,24,24:ink 1,2,2
4020 paper 0:pen 1
4030 mode 2
4040 x=300 : y=200
4050 plot x,y
4060 RETURN
```

The execution times for the above programs are;
Hisoft Pascal : 8 seconds
Locomotive BASIC : 24 seconds

Example 2: A prime number program.

The following program uses the sieve of Eratosthenes algorithm to generate prime numbers up to 5000:

HISOFT PASCAL

```
PROGRAM Primes;
{I$l-,c-,o-,a-,s- checks off}
CONST max=5000;
VAR sieve : ARRAY[1..max] OF
  BOOLEAN; prime,i : INTEGER;
BEGIN
 FOR i:=1 TO max DO sieve[i]:=true;
 prime:=2;
 REPEAT
  WHILE NOT sieve[prime] DO
   prime := prime + 1;
  i := prime;
  WHILE i<max DO
   BEGIN
   sieve[i]:=false; i:=i+prime;
   END;
  IF prime<max THEN write(prime:8);
 UNTIL prime=max;
END
```

LOCOMOTIVE BASIC

```
10 DEFINT a-z
20 true=-1: false=0
30 ZONE 8
40 MA=5000
50 DIM sieve(MA)
60 for i=1 TO MA
70 sieve(i)=true
80 NEXT i
90 prime=2
100 WHILE prime <> MA
110 WHILE NOT sieve(prime)
120 prime = prime + 1
130 WEND
140 i=prime
150 WHILE i<MA
160 sieve(i) = false
170 i = i + prime
180 WEND
190 IF prime<MA THEN PRINT prime,
200 WEND
```

The execution speeds of the above programs, without printing out the results are:
Hisoft Pascal : 2.5 seconds
Locomotive BASIC : 90 seconds

There is a much greater difference in execution times in this example as it is not limited by the graphic drawing speed of the firmware.

Well, I hope that this article has given you a small insight into what Pascal is all about and has whetted your appetite for the language. These articles will appear periodically, giving more example programs written in Hisoft Pascal and we welcome any contribution from you, whether it be philosophical criticism or an interesting program.

The Lucky Winner

Members Only!

The first Grand CPC464 User Club competition attracted an impressively high standard of entry. It's a shame that there can only be one winner - but there's plenty of incentive to keep those entries pouring in ....

Beat the Clock!

Philip Heathershaw of Hornsea, North Humberside topped a competitive list of entries with a very polished and well presented program entitled 'Beat the Clock'. In the view of the judging panel it made the best use of sound and graphics around a theme that is a cross between Scrabble and a cross word.

The sequence of screen shots shows the program in progress. You must first set the number of players from 1 to 6. Scrabble for one may seem a little pointless, but you always have time as your opponent, so the idea works surprisingly well.

The computer then issues you with 13 random letters - and you have one minute to place these on the grid and then cross connect the other letters to form words. The scoring system is logical and takes into account the need to discourage attempts at bogus words.

The program itself is too long to list herein, but it's good to the see the use of the real time features in the BASIC - and the use of sound is quite superb. Every movement is accompanied by sound: the clock ticks, the bell rings in a most convincing manner, and the flurry of activity when the score is totted up really helps keep the game alive.



We expect to be issuing the program shortly - it'll be an ideal Christmas gift -guaranteed the longevity of a true classic. Watch for details, it may be issued on its own - or we may include some others too, as Philip Heathershaw has promised that there's more where this came from.

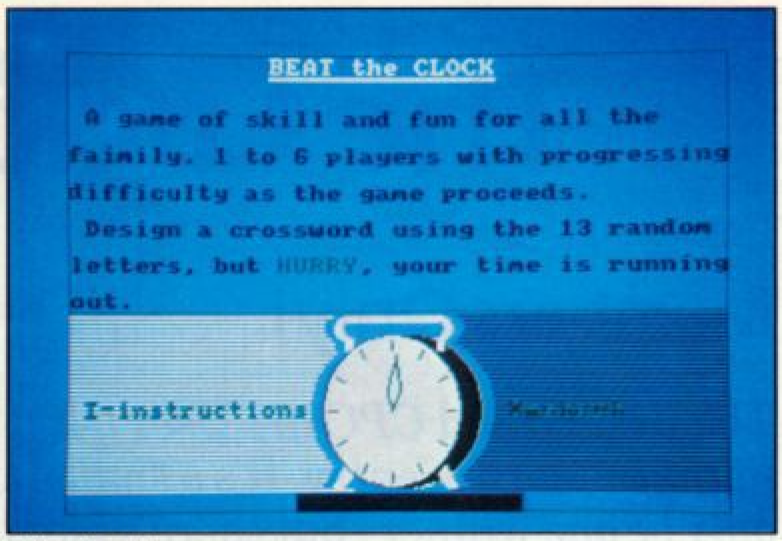
The pic shows David Juster - the MD of Triptych Publishing whose very original Brainpower series of training and applications programs are currently taking Spectrum and Commodore owners by storm - handing over the cheque to the jubilant Philip Heathershaw. Commented David Juster:

"The first time I get my hands on an Amstrad cheque and it's gone inside 20 seconds...."

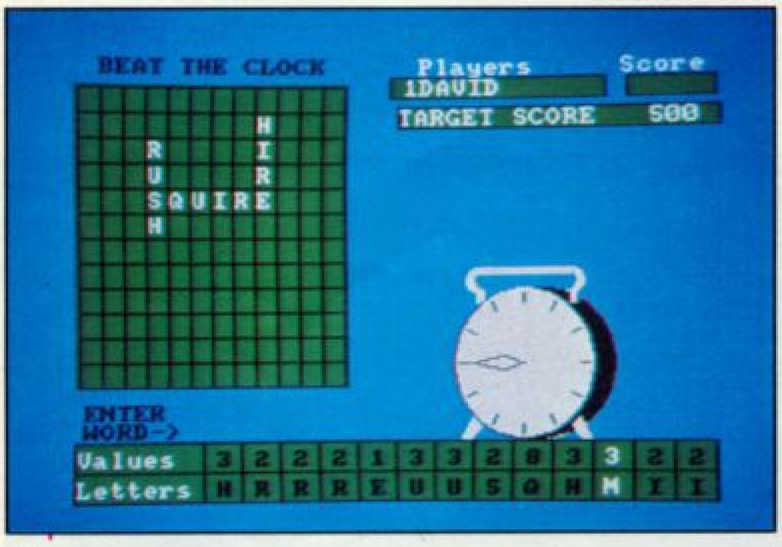
We're quite confident that the deal recently arranged to bring the Brainpower series to the CPC464 will cause this to be an entirely temporary state of affairs!

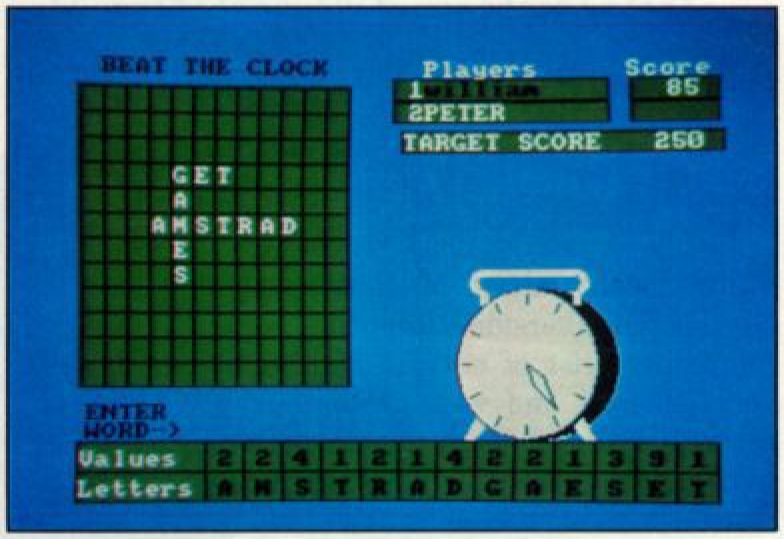
Philip Heathershaw even delivered another program when he visited our office to collect the cheque - a very competent computer crossword game. As a manager of an amusement arcade, Philip is surrounded by technology and still has the time and energy to want more. Since we've arranged to market his excellent software, we've had to exclude him from issuing future entries, just so you lot out there don't get too disheartened.





BEAT THE CLOCK - P. Heathershaw



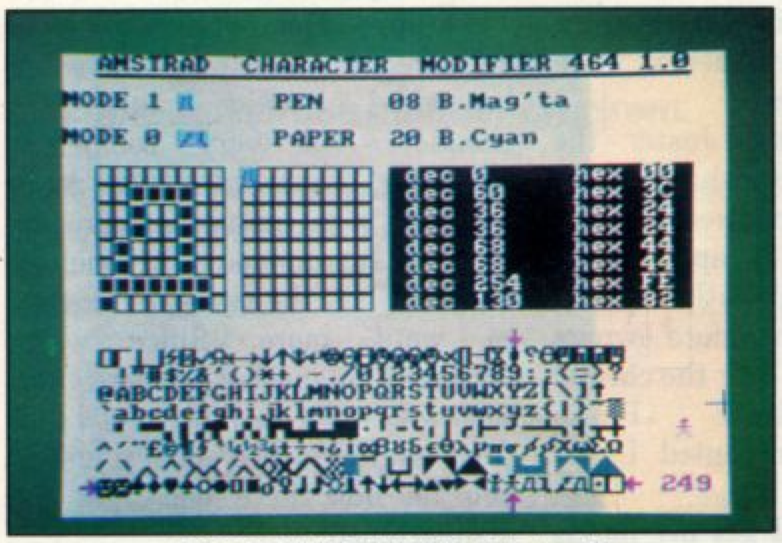


The Runners Up

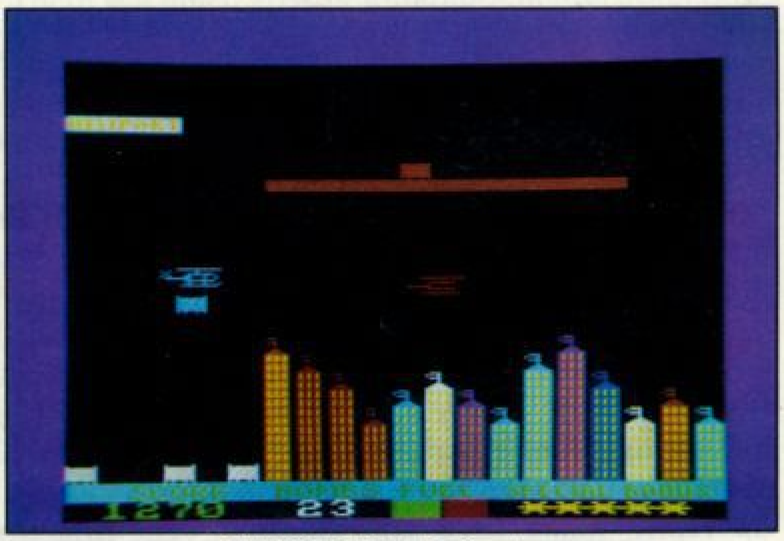
The quality of each of the runners up was outstanding. In particular, commiserations to P R Murfitt of Crawley. His character modifier was an outstanding example of a theme that has a popular topic. The presentation complete with colour screen photos and explanatory folder was devised with all the thoroughness you would expect of a teacher. As his submission pleaded that the lack of a printer prevented him from supplying a listing, we were pleased to be able to rectify this omission as part of his consolation prize.

The tome accompanying the program raises a point observed by several entrants that a 500 word summary is not sufficient to do justice to many types of utility program - and we must agree. However, we still need the 500 words summary to assist in identifying and screening entrants - but feel free to write an encylcopadia of instructions - as long as the 500 words precis contains the essence of what the program is all about.

A variant of Helibomber by Mr Gardiner took the prize (figuratively speaking) for the longest program. 26K produced some nice graphics and sound effects based on the city bomber



CHARACTER MODIFIER - P.R. Murfilt



CARGO KING - A.B. Gardner

theme, and extended the game to include fetching gold from the bombed basement buildings, and returning it to the heli-base. A few rough edges, to smooth down, and a re-submission will be a hot contender for the next round - see below.

It was good to see use of the joystick and sound in many of the entries - and perhaps none was better in the sound department than a program that owed much to Missile Command. The screen shot failed to develop on that program, so we're holding over further comment to the next issue - and hopefully we'll persuade the author to let us run the listing.

Another good entry was submitted under the title of "Deep Thought". With much trepidation this program was run behind closed doors..... and it turned out to be a very smartly presented numeric 'Mastermind'. Rather a large number of 'LETs' in the variable assignments hint strongly at an adaptation from another machine whose BASIC is still in the dark ages. Another worthwhile program, only 4K long and will be published in due course.

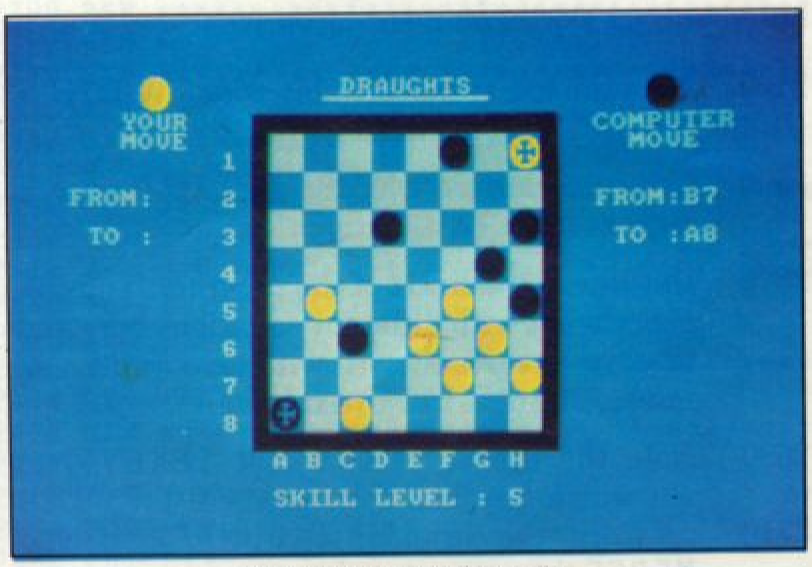
Other entries included several board games, an adventure or two and much more besides. The relatively short time since the competition closed and shortage of space prevents further commentary here, but the whole competition was an outstanding success and should continue to be a source of good material. Since we gave authors very little time to enter, the first time around - we think it's only fair to allow the non-winners a second chance to polish their submissions. This is particularly so in the case of those of you working on originals, since although there's a place in any machine for classics converted from the listings of other computers, it's always that much more challenging to be original or at least incorporate original elements in old favourites, isn't it?



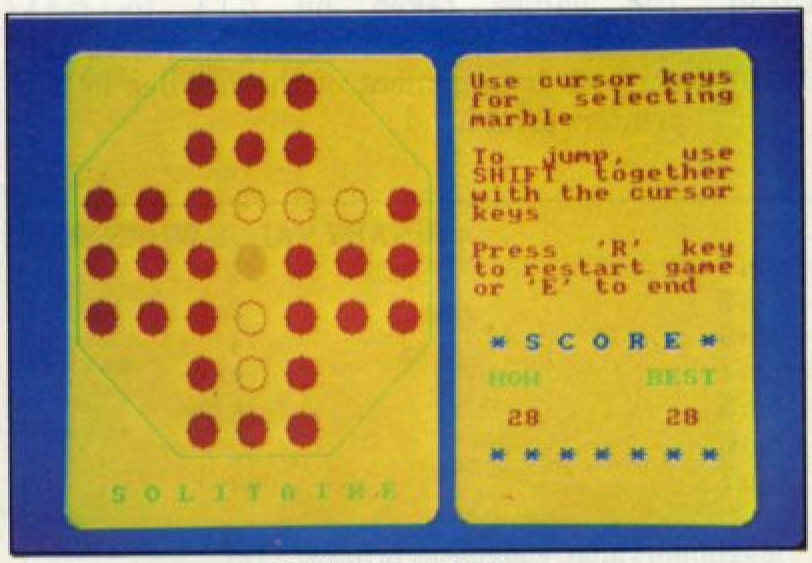
TERRORIST ATTACK - A.R. White



BULLION BANDIT - M. Glossop



DRAUGHTS - P.N. Shimells



SOLITAIRE - I.G. Wilson

Surface Details

In this issue I have two graphics programs for you. The first is a subroutine that will perform high resolution screen dumps to the AMSTRAD DMP-1 dot matrix printer. The second program plots 3D surfaces like the one shown in Figure 1.

The screen dump listing should be typed in and saved on cassette using the name `DUMPER`. You can then incorporate it into your programs by using the command `MERGE "DUMPER"` taking care, of course, to leave the line numbers 25000 to 25250 unused in your original program.

The subroutine has two major parts - the subroutine at 25180 - 25250 reads the screen using the BASIC command `TEST` and assembles 1 byte at a time for output to the printer. Lines 25030 to 25170 contain the controlling loops and output commands.

The program lines which are of special interest are:

25030 Sets up the array containing 1 printer line of bit patterns.

25110 Sets up the printer to receive graphic data in the form of a BIT IMAGE.
ESC K `CHR$(27); CHR$(75)`
tells the printer to enter graphics mode.
`CHR$(2); CHR$(64)`
tells the printer to expect 320 bytes of bit image information.

25150 Returns the line spacing on the printer to 6 lines per inch (in graphics mode the printer prints 9 lines per inch).

25160 The `ERASE` command releases the memory occupied by the array `i%`. Using this command also prevents an `Array already dimensioned` error when you use the screendump on a subsequent occasion.

25180 to 25240 The values taken by `p1%` to `p7%` correspond, in a BINARY pattern, to the vertical arrangement of the needles in the printers print head.

	BINARY VALUE WHEN SET
pin 1	1
pin 2	2
pin 3	4
pin 4	8
pin 5	16
pin 6	32
pin 7	64
maximum value readable by printer	127

You should note the use of INTEGER variables wherever possible throughout the routine so as to maximise program speed.

The second program allows you to plot 3D surfaces with complete control over the major components which affect the appearance of the pattern. These are:

HEIGHT	of picture expressed in pixels
WIDTH	of picture expressed in pixels
DETAIL	with which the picture is drawn. Note that LOWER values result in more detail, and longer plotting time.
DISTORTION	which increases exponentially. Using the program exactly as listed here the most interesting results are obtained using values between 1 and 3 (you can use decimal values e.g. 2.8)
PERSPECTIVE	negative values produce a view as if from above and positive values one from below. Once again the progressive effect of PERSPECTIVE alters exponentially.

Because you can vary the factors which make up the picture you can experiment with different combinations using low values for height and width and a high factor for detail. Doing so will minimise the time taken to draw the pattern. Then when you have found an interesting combination a larger, more detailed picture can be drawn. Try starting with HEIGHT 250, WIDTH 500, DETAIL 3, DISTORTION 2.5 PERSPECTIVE -5.

The program listing is fairly well self documented but some lines worth commenting on are -

2160 Note the use of the variable wide - WIDTH is a BASIC reserved word.

2500 here you can see why the DETAIL becomes less as the DETAIL factor is higher.

2520 this line is the heart of the program. You can experiment with different equations here and observe the results. (I will give you some interesting ones in the next issue.)

2690 to 2710 Note the use of `INKEY` (not `INKEY$`) to see which key has been pressed. Line 2700 provides the branch to `DUMPER` if you `MERGE` the two programs.

SURFACE DETAILS continued...

Even though the LOCOMOTIVE BASIC running on your AMSTRAD is one of the fastest available on any 8 bit micro it cannot compete with the compiled languages or machine code for sheer speed. For those of you who want to run fast graphics I have translated the programs here and from the last issue and compiled them using HISOFT PASCAL including screen dumps to the AMSTRAD DMP1 and EPSON compatible printers. These are available from me on tape for £3.95 including post & packing, and provide a good example of the power of HISOFT PASCAL (which you don't need to run the tape).

Write to:
D. ROBINSON
3 St. Catherines Drive,
Leconfield,
Beverley, Humberside HU17 7NT

HISOFT PASCAL is available from the AMSTRAD USER CLUB price **£29.70.**

```
2000 REM ********************************************
2010 REM ********************************************
2020 REM **    3D SURFACE PLOTTING PROGRAM         **
2030 REM ********************************************
2040 REM ********************************************
2050 REM
2060 REM
2070 REM ********************************************
2080 REM **              DATA INPUT                **
2090 REM ********************************************
2100 RAD
2110 CLS
2120 MODE 2
2130 INPUT "ENTER PICTURE HEIGHT IN PIXELS ( MIN 20  MAX 400 ) ";Height
2140 PRINT
2150 IF Height < 20 OR Height > 400 THEN 2130
2160 INPUT "ENTER PICTURE WIDTH IN PIXELS ( MIN 20  MAX 640 ) ";Wide
2170 PRINT
2180 IF Wide < 20 OR Wide > 640 THEN 2160
2190 INPUT "ENTER DETAIL FACTOR ( MIN 1  MAX 5 )              ";Detail
2200 PRINT
2210 IF Detail < 1 OR Detail > 5 THEN 2190
2220 INPUT "ENTER DISTORTION FACTOR ( MIN 0  MAX 99 )         ";Dist
2230 PRINT
2240 IF Dist < 0 OR Dist > 99 THEN 2220
2250 INPUT "ENTER PERSPECTIVE FACTOR ( MIN -99  MAX 99 )      ";Pers
2260 PRINT
2270 IF Pers < -99 OR Pers > 99 THEN 2250
2280 REM
2290 REM ********************************************
2300 REM **               INITIALISE               **
2310 REM ********************************************
2320 REM
2330 Halfwit=Wide/2
2340 Sqrwit=Halfwit↑2
2350 Halfht=Height/2
2360 Qtrht=Height/4
2370 Compw=320-Halfwit
2380 Detail=Detail*10
2390 REM
2400 REM ********************************************
2410 REM **            PLOT 3D SURFACE             **
2420 REM ********************************************
2430 REM
2440 CLS
2450 FOR l=0 TO Sqrwit
2460 Phi=l↑2
2470 Theta=Halfht
```

SURFACE DETAILS continued...

```
2380 Detail=Detail*10
2390 REM
2400 REM ******************************************
2410 REM **          PLOT 3D SURFACE            **
2420 REM ******************************************
2430 REM
2440 CLS
2450 FOR l=0 TO Sqrwit
2460 Phi=l↑2
2470 Theta=Halfht
2480 IF Sqrwit<Phi THEN 2640
2490 Sigma=SQR(Sqrwit-Phi)
2500 FOR k=-Sigma TO Sigma STEP Detail
2510 Rho=SQR(Phi+k*k)/Halfwit
2520 Tau=COS(Rho*EXP(Dist))
2530 Zeta=k/Pers+Tau*Qtrht
2540 IF Theta<Zeta THEN 2620
2550 Theta=Zeta
2560 Zeta=Halfht-Zeta
2570 Xpix=Halfwit-l+Compw
2580 Ypix=Zeta
2590 PLOT Xpix,Ypix
2600 Xpix=Halfwit+l+Compw
2610 PLOT Xpix,Ypix
2620 NEXT
2630 NEXT
2640 REM
2650 REM ******************************************
2660 REM **     END ROUTINE  /  DRAW ANOTHER ?   **
2670 REM ******************************************
2680 REM
2690 IF INKEY(63)=0 THEN STOP          : REM  Press x to end
2700 IF INKEY(27)=0 THEN GOSUB 25000   : REM  Press p to print screen
2710 IF INKEY(38)=0 THEN GOTO 2000     : REM  Press m to draw more
2720 GOTO 2690

25000 REM ****************************
25010 REM *     SCREEN DUMP          *
25020 REM ****************************
25030 DIM i%(320)
25040 pixln=413
25050 FOR k%=1 TO 28
25060 pixln=pixln-14
25070 FOR l%=1 TO 319
25080 GOSUB 25180
25090 i%(l%)=p1%+p2%+p3%+p4%+p5%+p6%+p7%
25100 NEXT
25110 PRINT#8,CHR$(27);CHR$(75);CHR$(2);CHR$(64);
25120 FOR j%=1 TO 320 : PRINT#8,CHR$(i%(j%)); : NEXT
25130 PRINT#8,CHR$(i%(320))
25140 NEXT
25150 PRINT#8,CHR$(15)
25160 ERASE i%
25170 RETURN
25180 p1%=TEST(l%*2,pixln)
25190 p2%=TEST(l%*2,pixln-2)*2
25200 p3%=TEST(l%*2,pixln-4)*4
25210 p4%=TEST(l%*2,pixln-6)*8
25220 p5%=TEST(l%*2,pixln-8)*16
25230 p6%=TEST(l%*2,pixln-10)*32
25240 p7%=TEST(l%*2,pixln-12)*64
25250 RETURN
```

The first of many.....

AMSTRAD Computing with the CPC464

Ian Sinclair
Granada
ISBN 0-246-12665-5
£5.95

The ubiquitous Ian Sinclair strikes again! This book arrived one day before press day on this issue, so this assessment will be somewhat less conscientious than it ought - but with Ian Sinclair behind the keys, it's reasonable to assume that a polished job has been performed.

The CPC464 user will be warmed with yet more confidence (if it were needed) that he or she was not saddled with a lemon. Mr Sinclair endears himself immediately with the phrase:

"The Amstrad CPC464 computer offers much more for either the home or the business user than any previous machine at a comparable price, more even than many machines at much higher prices." What a nice man.

And then he goes and ruins it all:

"When I opened my CPC464 computer I found that several of keytops were loose. If you find that this has happened to yours, don't panic, because most of the keytops simply plug back into place. The exception is the long spacebar. The holes in the brackets attached to the spacebar have to be hooked into the two metal prongs in the slot in which it fits......"

Scare monger. That particular problem was resolved some while ago at the production stage, and is indicative of the fact that we made considerable efforts to ship early machines to authors like Ian Sinclair to ensure that books would be available soon after the public launch. There's a further piece of heresy about plugs and contacts and wiggling things -you can tell Mr Sinclair has the attributes of TV designer from a previous incarnation!

The book shows enough evidence of CPC464-specific features to convince me that it's not a simple reincarnation in the style of "‹insert computer name here› Computing". You cannot EVERY or WEND on a CBM 64, nor can you on a Spectrum or Acorn machine, so congratulations are due on that score!

Apart from overlooking our request for uniformity in presentation conventions (typeface, description of non-printing keys etc.), the rest of the book is an ideal beginner's companion in the style of the other Sinclair books. It's a shame that like so many other books the beginner will doubtless fail to observe the difference between the figure '1' and the lower case letter 'l' in listings, (it happens even to CPC464 User readers!), but if we carp long enough in our reviews, maybe the message will gradually seep in.

And if anyone else asks me where to find the " and the " on the keyboard, I think I may scream........

Sensational Games for the AMSTRAD with the CPC464

Jim Gregory
Granada
ISBN 0246-12614-0
£5.95

The ink was barely dry when I opened this one - but once again Jim Gregory's book oozes with CPC464 specific features. It's full of programs -24 decent games in all, exhibiting good program structure, and providing good examples from which to learn. Long multistatement lines are generally avoided -and although suffering from the 'l' & '1' syndrome mentioned above, the programs are easily read and reasonably easily traced through execution.

If we can get permission from Granada and Jim Gregory, then maybe we'll publish one in the next issue to tempt you. They're not bad at all, and emphasise that the CPC464 is easily the most versatile machine on the market.

There's a useful section on subroutines as an aid to programming. The use of carefully designed subroutines combined with the CPC464 editor and disc system will alleviate the drudgery of typing in listings.

A well conceived series of programs, not overwhelmingly commented in the text or within using REM statements - but you can always use the TRON feature if you want to chart the execution. Good value at £5.95.

The Advanced CPC464 User Guide

Mark Harrison
Sigma
Price to be announced

We've had the opportunity to work with Sigma on the production of this title,which in view of the fact that they have obligingly conformed to our presentation conventions means that it's a little behind the Granada titles.

In view of this liaison work, we are pleased to be able to issue it with a full 'Amsoft approval' on all scores. It's aimed as at a level that's a subsequent purchase to Ian Sinclair's book - and since so many CPC464 users are second time owners, this book will undoubtedly enjoy immediate success. It's due out around the middle of October. A complete review will appear in the next issue.

CPC464 USER £2000 program competition!

Think what you could buy with a £2000 windfall......

The objective couldn't be simpler: write the best program submitted to the CPC464 user review panel. Every other month £2000 will be awarded to the best submission.

HOW TO ENTER:

Think about your program, and map it out in a series of events or features. Write the program onto cassette based around these events and check that the program runs as intended. Once you are satisfied, send a copy of the cassette in a suitable envelope along with the following:

1) A brief summary of the program in 500 words or less.
2) The completed competition entry form, which must be signed.
3) Program listings, if available.
4) SAE if you want your entry returned.

RULES

1 The winner(s) will be the person or group who submits the best program. It may be any piece of software that runs on the CPC464.

2 The name of the winner will be printed in the next issue of CPC464 USER.

3 All entries must arrive by November 30th 1984. Entries arriving after that date will be included in the next issue's competition.

4 All entries must INCLUDE a cassette copy of the program (plus loading instructions where necessary!), AND A SIGNED COMPETITION ENTRY FORM. A full listing would be helpful, but not essential. A brief summary of the program and its purpose should accompany all entries.

5 All entries will be treated in strict confidence.

6 Neither AMSOFT nor Amstrad can be held to be responsible for any loss or damage to any submission.

7 If you want the program returned, please supply a stamped self addressed envelope of adequate dimensions.

8 No correspondence can be entered in to concerning programs submitted for the cash prize competition.

9 The decision of the judges is final.

10 It is a condition of entry that all entrants have exclusive ownership of the copyright of the material submitted, and that the winner agrees to assign all copyright in the winning program to AMSTRAD. Where the entrant is more than one individual, then one person MUST be nominated and empowered to act on behalf of the entire group.

All entrants must undertake not to submit the same or a similar program to any other magazine, publisher or organisation until after the announcement of the winning entry.

11 AMSOFT may offer to publish programs either in CPC464 USER or as commercial software, in which case AMSOFT will agree the terms on an individual basis with the author(s) concerned. AMSOFT reserves the right to amend, alter or revise any program that it publishes.

12 No employees of AMSOFT or AMSTRAD, or their relatives may enter this competition.

See the entry form enclosed with this issue, and remember to fill it out with your name and address!

You really can't go wrong with any Level 9 game as they are really brilliant

CRASH MICRO SEPT '84.

"Whichever machine you own, if you have the vaguest tendency towards adventure playing then you must try one of these games (unfortunately you'll probably end up wanting to buy the lot!)."
Computing Today, August 84

"To me, all Level 9 adventures create a remarkable atmosphere because the descriptions sound so life-like. This is where so many other adventures fail."
Crash, July 84

"But it's not just the size of the game it's the quality as well that is astonishing ... ... scenes to fire the imagination."
PCG, April 84

"As in all Level 9's adventures, the real pleasure comes not from scoring points but in exploring the world in which the game is set and learning about its denizens."
Which Micro?, February 84

"(LORDS OF TIME). As we have come to expect from Level 9, the program is executed with wonderful style ... Highly recommended."
PCW, 1 February 84

"I thoroghly recommend these Adventures, they are excellent value for money. No self-respecting Adventure-addict should be without them. I believe Level 9 are producing a series of Adventures which should be regarded as classics."
Atari User, July 84

"These programs run very fast and there are no frustrating pauses. Level 9 Adventures are superbly designed and programmed, the contents first rate. The implementation of Colossal Adventure is nothing short of brilliance; rush out and buy it. While you're at it, buy their others too. Simply smashing!"
Your 64, June 84

"Level 9 – arguably the producer of the best adventure games in the UK – has done it again. LORDS OF TIME is a sparkling addition to its stable of winners."
Acorn User, July 84

"(SNOWBALL). This is another imaginative, massive-scaled immensely enjoyable adventure from those experts down at Level 9 Computing."
Your Computer, March 84



Level 9's epic adventures are now here for the AMSTRAD CPC464. Disk versions are available for the BBC (40/80 track) and Commodore 64. And, best of all, RETURN TO EDEN is ready. It's been a busy month!

NEW

RETURN TO EDEN is the long-awaited sequel to Level 9's top-selling Snowball adventure. Now it's here with 220 locations, masses of puzzles, and with pictures on the CBM and Spectrum versions.

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Available from W H Smith and good computer shops everywhere. If your local dealer doesn't stock Level 9 adventures yet, get him to contact us or: Centresoft, Microdealer UK, Ferranti & Craig, Leisuresoft, Lime Tree, LVL, PCS, R & R or Wonderbridge.

AMSTRAD BBC CBM64 SPECTRUM MTX ORIC 1 LYNX NASCOM ATARI

AMSOFT's Soft Centre...

A computer as comprehensive and attractive as the CPC464 will inevitably attract a wide range of software: educational, entertainment, utility, business, 'custom' applications of all types.

Amsoft has been established to encourage and harness this effort to provide software for CPC464 users.



Watch out for AMSOFT software centres at retailers - or buy from AMSOFT direct. The autumn catalogue is available now to help you choose, although you should also watch the press for details of the new software being launched each week.